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Legislative Assembly of Ontario



Select Committee on Energy
Organization

First Session, 34th Parliament
Monday, February 29, 1988

Speaker: Honourable Hugh A. Edighoffer
Clerk of the House: Claude L. DesRosiers

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Monday, February 29, 1988

The committee met at 2:06 p.m. in room 228.

ORGANIZATION

Mr. Chairman: I will call the meeting of the select committee to order. I would like to thank everyone for coming out this afternoon. This meeting is an organizational meeting of the select committee on energy, which was created before the House rose a couple of weeks back.

I would like to introduce Tannis Manikel, on my right, who is going to be the clerk of this committee, and Jerry Richmond, on my left, who is from the legislative research service and will be helping us out as we carry out our deliberations.

I would also like to point out for the benefit of the members and those in the audience that while we are not on television here, we are being carried over the audio network in the House, so I welcome all of our audio listeners.

There is an agenda before you and there are a couple of housekeeping matters I would like to take care of before we start. The first is the election of a vice-chairman. I wonder if there might be a motion in that regard.

Mrs. Sullivan: I would like to nominate Jim McGuigan.

Mr. Chairman: Are there any other nominations? Seeing none, I then declare Mr. McGuigan appointed vice-chairman of this committee.

Another piece of business is a subcommittee to handle the agenda and administration. I wonder if there might be a motion in that regard to appoint a committee, basically to look after the scheduling and administration of this committee. I see our motion is being filled out right now.

Mr. Charlton: moves that Mr. McGuigan, Mr. Charlton, Mr. Runciman and Mr. Carrothers do compose the subcommittee on agenda and procedure and that the said subcommittee meet from time to time at the call of the chairman to consider and to report to the committee on the business of the committee, that substitutions be permitted on the subcommittee and that the presence of all members of the subcommittee is necessary to constitute a meeting.

Motion agreed to.

Mr. Chairman: The third item is the budget. You have before you a budget which is really just

dealing with the meetings we are having today and tomorrow and a few other matters that might come up in the interim. I wonder if I could have someone move acceptance of this budget.

Mr. Matrundola: moves acceptance of the budget.

Mr. Cureatz: I would like to speak to it.

Mr. Chairman: OK. I was going to ask for discussion.

Mr. Cureatz: Oh, sorry.

Will you be bringing forward any further budgets in anticipation of our investigation, or are we to consider this etched in stone?

Mr. Chairman: No, I think this is just to deal with the organizational portion of this committee. What I hope to see happen is that the subcommittee on administration would take away the deliberations of the next day or so and come back with, among other things, a proposed budget which would take into account the hearings of the committee.

Mr. Cureatz: No doubt our subcommittee will be evaluating all the requirements that this committee will have and that will be reflected in the budget?

Mr. Chairman: I think the subcommittee could take note of that. Is there any other discussion or questions? I wonder if the clerk has any comments that might be helpful.

Clerk of the Committee: As you said, this budget just covers the meetings for these two days, mostly per diems and members' expenses. There is also money in the budget to cover a little bit on the operative side of it, because we are just about at the end of the fiscal year; we will not be doing a major budget until some time in April.

Mr. Chairman: Is there any further discussion?

Mr. Cureatz: When do you anticipate coming back to the committee?

Mr. Chairman: I guess some time during the next sittings in April would seem the most likely time.

Mr. Cureatz: April when the House is in session? Is that what the plan of attack is?

Mr. Chairman: I think so. I do not see that there would be time for the subcommittee to sit

and come back with its recommendations much before that.

Mr. Cureatz: Then you would see sitting after the House has adjourned, into the summer area?

Mr. Chairman: I think so. These are perhaps some of the items we will be discussing today: what the members feel we should be looking at and how we should be carrying out our mandate.

I wonder if I could now put the question on the budget.

Motion agreed to.

Mr. Chairman: We are on to what would be the main item for discussion today. This committee has been struck with a mandate to inquire into the affairs of Ontario Hydro. That is a very broad mandate, and I would appreciate getting some direction from the committee on what it feels we should be looking into and how it feels we should be doing that.

We have before us a document from Hydro, entitled Meeting Future Energy Needs: Draft Demand-Supply Planning Strategy. I think that is one item we would want to consider. It contains in it—it is chapter 12 for those who have it before them—a set of planning principles. We might want to make those the focus of our deliberations, but I think I would like some direction from the committee as to those matters, how it feels we should be dealing with it and other matters with respect to Ontario Hydro affairs that members feel the committee should be looking into.

I would then hope that the deliberations of today could be taken away by the subcommittee and, as I indicated earlier, the subcommittee report back with a more detailed agenda.

Mr. Charlton: You raised the issue of the DSPS, as it is now referred to, and I agree. I think it is a priority item for the committee.

On the other hand, I do not fully agree with either the way this referral was handled or the extent of the implication of the Minister of Energy (Mr. Wong) referring the DSPS here to this committee. I would like to move, and then I would like to speak to my motion, that this committee do an immediate interim report restating recommendation 17 from the last select committee report. I will read that recommendation into the record:

"The Ontario Energy Board should conduct a public review of the results of Ontario Hydro's demand and supply options study. This review should take place at least 60 days after a final report on the options and all supporting docu-

ments have been issued. Recommendations should be made to cabinet in a public report."

If I could speak to my motion, the former select committee, in its deliberations and throughout its discussions—and we did have some specific discussions on Demand-Supply Options Study: The Options, as well—became very aware of the complicated nature of dealing both with Hydro matters and with presentations, especially of technical documentation from Ontario Hydro. The committee's initial inclination when it was trying to put together its report was to have the DSOS come back to this committee upon its completion of stage 2, which is the stage we are presently at.

Mr. Chairman: Could I just interrupt for a second? Just for the benefit of the members, we have a document from Mr. Richmond, a sort of briefing paper which was handed out. On page 5 of that is the recommendation of the committee that Mr. Charlton was speaking of just now.

Mr. Charlton: After very careful and thorough thought, the former select committee ended up recommending that the DSOS go to the Ontario Energy Board for a full public review. We did that for a number of reasons. One of the reasons was not, certainly, that members of that committee were interested in having a shot at the DSOS themselves. That interest was certainly there, and that is why the original inclination of the committee was to have it referred back to it.

We made that recommendation for a number of very serious reasons. First, when Hydro came before that select committee and described the study which it had undertaken, it described the study as the most comprehensive planning study that it had ever undertaken. For those members of the committee who were not on the last select committee on energy, this study and the conclusions which were finally reached in the final stages of this study—and this is not the final phase of this study—will lock this province and the government of this province in for probably the next 25 years in terms of the province's approach to electrical energy.

It is an extremely important issue. The select committee made its decision to recommend that the matter be referred to the OEB for several reasons. First, in our last set of hearings, around both the Darlington question and the whole question of demand and supply and alternatives, the select committee had difficulty getting out of the House leaders adequate sitting time to properly do the job that was asked of it.

Second, although we have the option of having a budget and considering the hiring of consul-

tants, expert witnesses and all of those other things which committees do, because of the time-frame question and because of the limited budget we will get, we felt that we would not have the expertise or the time to adequately deal with all the technical parts of this study.

I have absolutely no problem with this select committee's dealing with the demand and supply planning study in some fashion. If, as the chairman has suggested, for example, we want to take chapter 12 of that study and look at the principles by which Hydro is approaching the whole question of planning and strategy, I do not see that as a major problem. But because this document is the forerunner to conclusions somewhere not too far down the road, within the next two years, it will lock this province in, as I suggested, for probably the next 25 years. I think it is important that we seriously consider the recommendation which the select committee made a year and a half ago, that this matter be referred to the OEB for a full and thorough public hearing, with a public report of recommendations to the cabinet.

1420

I am moving this motion because the last select committee very carefully thought this question through. We had the OEB before us. They suggested that although it was not currently part of their mandate, if they were instructed to do the job, they would be more than happy to do the job. The OEB, even if it cannot sit quite as quickly on this matter as we can, would be in a position to have a three- or four-month hearing on the issue of the demand-supply options study, to go through it in detail, having access not only to its own very technical expertise but to expert interveners as well, who will inevitably be part of its hearing process.

We will not get the time to do a three- or four-month hearing. We will get assigned by the House leaders four or maybe five weeks. The chairman is hoping for six. Even if we were to get six weeks of hearing time, it would not be an adequate time for us to very thoroughly tear apart this stage of the study. Some have suggested it is too early in the process to start having public hearings on the DSOS. On the other hand, from my perspective, now is the time when we want to maximize both public input and expert input into the direction in which the final stages of Hydro's planning will head.

As I suggested and will repeat, the last select committee spent some considerable time considering the question of who should review the DSOS. It was the unanimous view of that

committee that it should be the OEB. For those reasons, I have moved this motion and I ask members of the committee to please support it.

Mr. Chairman: Mr. Cureatz, did you want to speak to this motion?

Mr. Cureatz: As a matter of fact, to other matters, but now that this motion is on the floor, yes, I will speak to this motion. I give credit to my most innovative colleague Mr. Charlton for bringing forward, right at the start, past reports of the select committee on Ontario Hydro affairs. There is probably only one other person around the chamber who has had longer experience in terms of the select committee on energy than Mr. Charlton, and that is myself.

Since 1977, there has been some format of committee looking at nuclear power and Ontario Hydro in some form or fashion. Actually, I am sympathetic towards what my colleague is proposing in terms of looking at past reports of the select committee on energy. Of course, he is being really cute because it puts all the new Liberal members on the committee suddenly scrambling as to what they should be doing. But I know if they look to more senior minds, like Jim McGuigan, who will lead the pack correctly in voting against the proposed motion, they will have no difficulty in making their decision, and hence what will take place in terms of the suggestion of Mr. Charlton.

Notwithstanding the political realities of what is going to take place in regard to the motion, the only reason I am going to be voting against the motion is that, Mr. Charlton, if it goes off to the Ontario Energy Board, I just have an innate fear it is not going to take place anyway. It will get lost in that whole quagmire of bureaucratic bungling in terms of whether it will ever get done, and it will not get done.

I would much rather at least keep a hands-on approach—as little influence as we do have now in opposition—in terms of the select committee that we are members of, to at least try to keep in the political front our examination of Ontario Hydro. I think it is worth while for us to be aggressive and active and for all of us to have an open mind because I think, as the evidence will be coming forward, all committee members will be finding out there is no right or wrong in terms of political philosophy with regard to how Ontario Hydro should or should not be operating or how it should be examining the demand-supply options study.

As a result, the only fear I actually have is that this committee will not be able to do all it should do—and I am in agreement with Mr. Charlton on

that matter—within the time period allotted. I want to strongly urge the steering committee that it should actually be looking at at least a minimal two-year time period. I know it seems incredible to think: “Holy smoke! Two years? Can you not get any work done?” But I tell you the time will slip by quickly around here. In terms of the committee doing some investigative work and maybe some travelling around the province looking into Ontario Hydro installations or suggested projects, that time period will slip by very quickly.

Actually, I do not think we can do the work if we are going to take a look at the demand-supply options study in the amount of time that has been allocated to this committee. We hope that the present government will examine the recommendations from the committee and draft a policy which will give direction to Ontario Hydro. Mr. Charlton is right and I think this committee’s work will set the tone for at least the next turn-of-the-century time period. That is why I would much rather keep this on the political front instead of shovelling it off to the Ontario Energy Board, hoping it will come up with something. They do not have the mandate to do it anyway and I cannot see this present government passing special legislation to give them the mandate to do it.

I give you full marks for bringing forward the work of our past committee, because I think it is worth while for us to examine what has been done in the past, but I am not going to be supporting the motion. I can only urge the steering committee to seek more time and for us to be aggressive in terms of looking at hiring consultants. That goes to some other aspects of the committee that I want to bring up later.

Mr. Runciman: To show you what a group of independent thinkers we are, I am going to support Mr. Charlton’s motion. Mr. Cureatz and I have not had an opportunity to discuss this, but when I made my comments in the House in response to the announcement of the establishment of the select committee, I expressed a very clear concern at that time that this not simply be a window-dressing situation whereby we would be going through six, eight or 10 weeks of hearings, being bogged down in the technical aspects of this report. In essence, I think that is indeed what is going to occur and we are not really going to accomplish a great deal.

I think we can take an in-depth look at specific aspects of this report, but to look at the report as a whole and try to deal with it in any meaningful way is an exercise in futility on the part of this

committee. There are other areas where we can have a significant impact in a rather confined period of time, and those are the areas where we should be concentrating, not getting into this sort of political showmanship. In my view, that is what this is if we get tied down with this report. We are not going to be able to accomplish a great deal in terms of having an impact in terms of real change in the operations of Ontario Hydro and making Ontario Hydro more accountable to the Legislative Assembly.

I personally agree with Mr. Charlton’s recommendation and his motion. I think Mr. Cureatz’s concern about the reference to the Ontario Energy Board could be addressed through some sort of amendment to Mr. Charlton’s motion, regarding some kind of time frame being laid down in respect to whether we will be dealing with this matter and reporting to the cabinet with respect to the report. In that way it does not leave it open-ended and, indeed, if this committee sees fit to reaffirm the position taken by the previous select committee and be a little more specific in terms of a time requirement for a response, I think it can be very useful indeed. Certainly, we do not have the resources to do the meaningful work that has to be done in this report.

In terms of the opposition, I know all of us feel this with the limited numbers. We simply do not have the time. We can get more sittings. You can get another 10 or 12 weeks of sittings, if you will, but I know that I personally sit on three committees now and I have a great deal of constituency business plus a number of critic hats, as most of us wear in opposition. I do not think there is much to be gained by getting a lot of additional sittings. Certainly, there may be a benefit to a limited few weeks, but I think we will play a more important role if we can key in on areas where we can really have an impact. In my view, by concentrating on this report, the technical aspects of this report, we are going to be wasting everybody’s time.

1430

Mrs. Grier: I certainly appreciate the remarks of Mr. Runciman. I hope that Mr. Cureatz’s rather gloomy predictions about the block voting or partisan voting on the committee are equally incorrect for the other party, because certainly my experience on the last select committee on energy, which was my first committee experience in this place, was very encouraging in that everybody looked at the whole prospect and problem of Ontario Hydro in a very nonpartisan way. It was a very good learning experience for

all of us. We all came to the conclusions that are shown in the recommendations.

When I joined that committee my fear was that we were going to repeat the work that had been done by all the other previous committees looking at Ontario Hydro. I learned in the course of that committee how very complex it was and how very much there was to learn. I think it would be very unfortunate now to go back instead of forward. By repeating all the technical input that previous committees have had, I think we would be going backward rather than looking forward towards policy and strategy.

To accept the motion by Mr. Charlton and refer those aspects of the DSOS report that are technical, that are complex, that can be reviewed, given their expertise, to the Ontario Energy Board is the most appropriate way to go. Contrary to the implications of Mr. Cureatz's remarks, that does not absolve this committee of the obligation or responsibility of looking at the policy aspects of the DSOS report. The whole question of strategy and policy is very properly what this committee ought to be looking at.

I see it, frankly, as a parallel course to ask the Ontario Energy Board to examine the technical aspects and the documentation, which they have the expertise to examine, and for this committee to look at the report from the point of view of what it says about government policy and the strategies that Ontario Hydro uses to come up with its own conclusions. I see both of those things going on at the same time in the hope that this committee might then benefit from the recommendations of the Ontario Energy Board before we make our final report back to the government.

I think the motion that Mr. Charlton has made is the appropriate way for the committee to go. I really hope that at least some of the government members on the committee will see fit to support it, because I think it is the most productive way in which this committee could manage its affairs.

Mr. McGuigan: Mr. Chairman, I congratulate you on your position as chairman of the committee. I appreciate the words of the critics and those who have spoken. I know they are well thought out. The government position is that when we committed ourselves to a review, we wanted to have it open and public, befitting the style that has been announced by the Premier (Mr. Peterson) ever since he became Premier. In that light, we do not think the energy board is the best one to do this because of one technical reason: the energy board is largely concerned with a regulatory position rather than a policy

position. We, as legislators, are the ones who should be deciding policies, with the advice and support we get from experts, the public and so on.

This committee can deal with this report. It is largely a matter of strategy but it does not lay down principles and policies we want to follow for the next 25 years.

On top of that, we had at least one major change, in my view, and that is the imminent free trade agreement, which personally I am assuming is going to be signed by both governments. As I read that, it would dictate that, for instance, Quebec, which offers hydro to New England states, instead of looking at the market in New England, among the big players there, where hydro sells at quite a high rate—we will say for argument's sake around seven cents a kilowatt-hour—with Quebec therefore pricing its hydro according to that market, it would now under the free trade agreement have to offer it at its domestic price, which is about half the price. Conversely, they would have to raise the domestic price to meet the New England market.

If that is the case, and it certainly appears at the moment to be the case, it would have a profound effect on the direction we would be taking, because there is a possibility that Quebec would be looking to Ontario as a market rather than to New England. The same applies to gas from western Canada. I know we are not talking about gas here, but we are talking about energy. So some of these matters have to be reviewed on the political level.

The other thing I noticed in reviewing the report is that it constantly mentions economic alternatives: Where you take one alternative, you apply that against another economic alternative and always select the lower one. I know the government would want to see the best possible price we could have here in Ontario, but I wonder, in view of some of the remarks that have been made in the past about the environment and creating employment in Ontario and so on, if those again are political questions and policy questions rather than questions we would want the Ontario Energy Board to look after.

On top of that, we have the question of whether the public would see the Ontario Energy Board as being far enough away from Ontario Hydro and from government to make what would be seen as an independent assessment.

With those items, I think you will find the government people would have to vote against the motion.

Mr. Runciman: Everybody hear that?

Mr. Chairman: Are there any others who would like to speak to the motion?

Mrs. Sullivan: Yes. I am pleased to be sitting on this committee, joining people who have worked on select committees in the past and who have a great deal more expertise, and I appreciate that. I am pleased as well that the committee is looking at the public planning process involving Hydro. The technical aspects of the demand-supply planning strategy report will certainly be beyond me, but I am looking forward to expert witnesses who will be coming before this committee in relationship to some of the technical matters. Really, my interest is more in the public policy planning and development areas.

Out of the report prepared by Hydro, we have a strategic framework which can be looked on as a direction for the future, but the very key matter to me, and one of the reasons I will not be supporting Mr. Charlton's motion, is that having the energy board conduct the kind of review Mr. Charlton is recommending means that legislators are removed from that process. For that accountability reason, the involvement of members, of the public, of expert witnesses who come before us, I will be voting against Mr. Charlton's motion.

1440

Mr. Chairman: Are there any others who would like to speak to the motion?

Mr. Runciman: Just a brief comment—

Mr. Chairman: I wonder if there are any others who would like to speak for the first time. Mr. Charlton has indicated he would like to speak.

Mr. Charlton: Just to wrap up.

Mr. Chairman: OK. Mr. Runciman?

Mr. Runciman: I just wanted to reinforce the point Mr. Cureatz made earlier. We have heard Mr. McGuigan and other members of the Liberal caucus indicate their opposition to this. I just wanted to remind everyone, and to reinforce what Mr. Cureatz said, that these are positions which are completely different from those taken by their colleagues in the last report.

Mr. Charlton: I would like to just wrap up before we vote and to deal with a number of the issues raised by a number of members regarding the motion which I put. Let me start out by saying that my motion is not intended to take the legislators out of the process. My motion is an attempt to ensure that the whole document, the DSPS, gets a thorough review.

I still want to see this committee deal with the policy questions, the strategic questions, which we have the capability of dealing with in a fairly appropriate way: those issues of public policy that relate to the DSPS. I want to see us proceed with that. My motion is not intended to preclude that.

What my motion will do to facilitate that is twofold. Mrs. Grier mentioned it in her comments. First, it will allow us, instead of trying to battle among ourselves over which sections of the study we are going to look at, to focus on those specific sections which are appropriate for this committee to deal with, without having to worry in the initial stages about questions of a technical nature which we do not have the full capability to comprehend as we should.

If we set a time frame, as Mr. Runciman suggested—and I have absolutely no problem, if we pass this motion, with suggesting a time frame in terms of when the OEB should finish its review—we may, in fact, as a committee then have the benefit of its recommendations to look at, as well as going through our own deliberations on the questions of public policy.

Mr. Cureatz raised the question of the OEB not being mandated to handle this task. That is not a problem. The chairman of the OEB has already told the former select committee, clearly, on the public record, that it would be happy to take on the task if it were asked to. The question of mandating it to do it does not require legislative amendments. It simply requires an agreement between the Ministry of Energy and the OEB. That technical hitch does not exist.

Mr. McGuigan raised the issue of the free trade agreement and its presumed implementation and its potential impact on some future directions Ontario Hydro should or could be looking at, and he is correct. If the free trade agreement is implemented, as many expect it will be, it will significantly alter the negotiating position between Ontario Hydro and Hydro-Québec. I do not think there is any two ways about that.

A major problem the two jurisdictions have had in their negotiations in the past is that Ontario Hydro goes into those negotiations from the perspective of what its next increment of power would cost if it built its own plant, and Hydro-Québec goes into those negotiations from the perspective of what it can sell its power for in New England.

The free trade agreement will change that dramatically if it is implemented. There is no question about that. And it will significantly

change Ontario Hydro's ability to negotiate effectively. Again, that is a policy question and a policy issue, and I do not mean to preclude this committee looking at matters like that by my motion to refer the whole study to the OEB.

Mr. McGuigan also raised the question of whether the OEB is far enough away from Ontario Hydro. The OEB may not be the ideal body to review the DSPS if we had an option of quickly putting in place the sort of Utopian forum for dealing with that question. It does not exist, unfortunately.

Certainly the OEB is farther away from Ontario Hydro than the government is, and therefore than this select committee is, simply because this committee is dominated by government members. If you looked at the record of the OEB in terms of things it has recommended over the course of the last 15 years, Hydro has complied with less than five per cent of the issues recommended by the OEB. I think that speaks to the question of how close the OEB and Ontario Hydro are.

It is not a perfect forum, but it has the expertise to look at the technical aspects of this study and the technical aspects of where Ontario Hydro should be going in the future that we as a committee will have a difficult time getting at.

I repeat again that it is not my intention to remove this question from either our agenda or our responsibility as a committee. My motion, I think, will allow this committee to focus very specifically and very clearly on the strategic questions, on the policy questions, on the public policy questions which are set out in the DSPS.

If my motion were to carry, we will then have a parallel process going on, with the OEB looking at the entire document and dealing with the technical aspects of it with long lineups, I would imagine, of technical expertise having input into that process. We may in fact end up with a package of recommendations from the OEB that can assist us in our final report to the Legislature as well as having its recommendations go directly to the cabinet.

I think I have covered all of the issues that were raised, and my motion is not in conflict with any of those issues. It is a motion which is intended to supplement the process that we have here.

I repeat what I said in my opening remarks when I moved the motion. If nothing else is clear, everybody who has spoken has concurred with my opening remarks that this committee will get neither the sitting time nor the budget to review the entire document in detail. We may get to look at some aspects of it, and we likely will look at

some aspects of it. My motion does not preclude us from continuing along that road, but there are very important parts of the document that we will never get to and that therefore there will be no public review of.

There will be some interministerial reviews, no question, all internal in government, but there will be no public reviews of any of the very technical and very complicated aspects of this report. I cannot see anything wrong in having that go on parallel with this document, which is going to set the stage for Ontario's direction for the next 25 years. It is going to lock this province in. When the study is finally completed and the decisions are made, it is going to lock this province in for 20 or 25 years.

To have this select committee do a partial review and that is all that ever happens, from my perspective is just not satisfactory. I do not want to stymie this committee dealing with any aspect of the DSPS that it wishes to, but there also has to be a full and thorough review of the entire document, and we as a committee will not be capable of doing that.

Mr. Chairman: Mrs. Sullivan, did you want to say something?

Mrs. Sullivan: I am sorry, Mr. Charlton thought he was going to have a summing up. He can possibly have it later on, but I am going to make just one more point, if I may.

As I understand it, the Minister of Energy (Mr. Wong) announced today that there will be an independent technical panel which will be reporting to him in an advisory capacity, having studied the technical aspects of the DSPS, and that panel will be available to us as these hearings go along. From my point of view, certainly I will be looking forward to the advice coming from that panel as we move along in the deliberations.

1450

Mr. McGuigan: On the question of time that our friend has mentioned, I appreciate that it is going to be difficult to get that time. I think it is up to the committee to insist that we get it. Again referring back to the free trade agreement, that may give us more time because it is going to take time for those factors to sort themselves out and become apparent and for new positions to be taken. I do not think it is quite as imperative as it was that we finish this by the end of this year. As mentioned by our colleague Mrs. Sullivan, the minister announced this morning—I think everybody has a copy of his speech—

Mrs. Grier: This is the first I have heard of it, so I would like a copy if there is one.

Mr. McGuigan: I am sorry. We passed them around to all the people who were here early. You are certainly welcome to my copy.

He is actually announcing three things: having a review of the Power Corporation Act and "appointing an independent technical advisory panel to look at the DSPS.... At the same time, the Minister of Energy will co-ordinate a detailed review of the DSPS by government ministries. This review will ensure that the public's interest in electricity system planning is considered and evaluated from a wide range of public policy perspectives."

There are things going on that parallel our work, will mesh with our work and I think will make our work easier.

Mr. Runciman: I just want to say that this is the first I have seen of this. In reading that paragraph, "The select committee's review of the DSPS will involve the Legislature," etc., it seems to me that is a rather arrogant comment for the minister to be making prior to this committee sitting down to discuss our agenda. Here we have the minister making a speech saying what our agenda is going to be. That should turn all members off. It is very upsetting to read that. I am sure Mr. Charlton shares that view. If members on the government side reflect upon it, I hope they will also be offended.

Mrs. Grier: I too have just looked at this for the first time and I find the actual draft of what the minister said to be somewhat at variance with what the government members said they hoped would occur, because I see no mention in here that this technical review is going to have any public process. It is going to be an internal technical review and then Hydro's planning proposals, when completed, will finally receive a thorough public review.

I think that is missing the point of what Mr. Charlton and I are trying to achieve by this motion, which is to have some expert, independent evaluation of the technical aspects of the DSPS, as it is now known, in public, as well as some public review by this committee of the policy and the strategy.

I still feel there is room for what is being suggested in the motion as well as the review the minister is now suggesting this committee should take. I too share the view that it is highly inappropriate timing for the minister to make this speech on the very day we are deciding what the committee is going to be all about.

Mr. Chairman: Any other comments?

Mr. McGuigan: Yes, I would like to make a comment. When I came in here at noon was the

first we had seen this. I knew a speech was being made this morning, but this is the first I have seen of it. I agree that committees set up their own agendas. He is doing some assuming and speculating in his comments. We, as members here, determine what our agenda shall be. If that turns out to be different from what the minister thinks it is going to be, I guess ministers are sometimes wrong.

Mr. Runciman: Have to resign.

Mr. McGuigan: They do not resign that easily.

Mr. Charlton: I would just like to respond to these two additional issues which have been raised. I am not particularly enamoured with the way in which the speech occurred this morning or that the minister has basically, as Mr. Runciman and Mrs. Grier have said, stuck his nose into the work of this committee.

But aside from that, I have no problem with the minister's having an expert technical panel to advise him, and I have no problem with the interministerial studies that will go on in relation to the DSPS. As Mrs. Grier said, though, that totally avoids the question of public hearings. Both of those processes may provide this committee with all kinds of useful material, as well as providing the government with useful material, but they totally circumvent the issue of a public process where the public can hear about the technical aspects of Hydro's direction and have some input into that.

I pick up on a comment that Mr. Cureatz made earlier about the bureaucratic jungle. Those were not the exact words he used, but he was referring to the OEB. As somebody who takes the time each year to make presentations to the OEB's annual hearings, although I find it very complex and sometimes confusing, and so does my staff, it is a process that has a beneficial place in this province. It would not be there any longer if it did not. Yes, it has its bureaucratic problems, but it is a useful process, and it has provided a good service in terms of both public and independent expert input in a public way.

I will just briefly read to you from the last select committee report, because I want to emphasize the public hearing aspect of what I am trying to accomplish in this motion. The last select committee, just before it made its recommendations 16 and 17, both dealing with questions of public hearings and public access to a hearings process, said: "There are, indeed, costs associated with public hearing processes. However, there are substantial costs and unac-

ceptable risks associated with circumventing public hearing processes."

I repeat what I said earlier. This committee will be a public committee. We will have some hearings. We will invite presentations. They will be limited, though—understand that—and if my motion is defeated, for all of the items in the demand-supply planning study which we are unable to deal with there will be no public process for what may be in some respects the most important aspects of that study.

Mr. McGuigan again raised the issue of timing. I am asking this committee to be a little bit realistic. What is required to go through the DSPS in detail, especially all the technical aspects of that study, is probably a three- to four-month hearing before the OEB. We can fight like hell as a committee to get four or five weeks. We may even reach the chairman's objective of six weeks of sitting time. Even if we were to exceed our wildest dreams and come up with eight weeks, we still will not have the time that is required and we still will not have a budget that will allow us to get at all the expertise, to get at all the technical sections of the report that we have all expressed concerns about being able to deal with anyway.

Let us be realistic. This committee will not get the time to deal with the report in its entirety. We can deal with specific sections of it, and I want us to proceed to do that. But I do not want to see those parts of the report which we are unable to deal with go totally unreviewed in a public way. It is too important to the future of this province to allow that to happen.

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Mr. McGuigan: I have one comment. Once all of these reports have been put together and sort of brought down into one, I can certainly see a final select committee with public input making comments before it actually goes to the government. That may not satisfy your requirements, but at least it will go part way to satisfying your requirements.

Mr. Charlton: This motion is for an open government.

Mr. Chairman: With that final word from Mr. Charlton, are there any others? OK. Let me just repeat the motion. Mr. Charlton has moved that this committee immediately prepare an interim report restating recommendation 17 made by the select committee on energy in its final report dated July 1986.

Is it the wish of the committee that this motion carry? Those in favour? Those opposed? I declare the motion defeated.

Motion negatived.

Mr. Chairman: If we would move back then to the discussion of the role of this committee, I think it would help the subcommittee. I should reiterate that I would see the subcommittee taking away from these discussions today and tomorrow the benefit of those discussions in coming up with an agenda and, I guess, a determination or a suggestion as to how we could deal with our mandate. I am wondering if any more members would like to comment on how.

Mr. Cureatz: Is Mr. Richmond our staff consultant with the committee? Is that how we are doing that?

Mr. Chairman: I guess the question of consultants is one of the items the committee would have to consider. If you have any comments on that, I would like to hear them.

Mr. Cureatz: Certainly his past experience has always proved worth while in coverage of the various committees I have been on. His work is certainly second to none in terms of input. Maybe we would turn to him in terms of those areas of the report that you think would be worth while for greater concentration of specified consultants, but maybe that will be something the steering committee could evaluate.

I am thinking in terms of what Mr. Charlton brought out, which is the technical aspects of the demand study. I do not see this committee getting into those kinds of figures in terms of whatever comes forward, be it the percentages, the technicalities, the high loads, the low loads and all those things. I see more the work of this committee as being the policy direction so that when it comes down to a judgement call, it is up to us to then make the call as to looking into the crystal ball and deciding which way the committee should go or which recommendations should be made.

By the same token, we quite often will have overlaps between what is the policy direction that this committee can investigate and where is the technical aspect in which we will be required possibly to evaluate some of the technical things. That could very well be beyond our scope and possibly yours, Mr. Richmond, without further consultants to give us some further clarification and guidance.

What I am saying is that I would like to see the committee move towards a policy direction. There are a variety of policy options available and it would be up to us, individually, as a caucus or as a committee, to decide which way we think things should go. Mrs. Grier, Mr. Charlton and I feel that there is a package—numbers 1, 8, 16 and

17—that should be recommended, whereas other members feel that, no, it should be numbers 12, 13 and 14. We have a variety of possibilities open to us so that after investigating them we can evaluate those for our own purposes in terms of how we interpreted the evidence that was brought forward.

In any event, that is the concern that I would like to see addressed in terms of more concentration towards the policy aspect, being adjustable for an overlap of the technical aspect. If there is a concern about the technical committee, listen, I would love to have it before us. Why not ask them: “Why should you not make your hearings open? Are you ready to do that?” I would make that kind of recommendation, as a committee: that the technical committee should be an open-hearing process. But these are some of things we can look at later.

However, I suppose I am rambling on again. I have two points. The first is, is Mr. Richmond going to be the sort of general consultant to the committee in anticipation of helping prepare, which I know is a lot of work, the bread-and-butter stuff, the paperwork? Every day, before the committee comes in, you have prepared a nice little package for us.

Second, are we open for consultants as we progress, to see if we have the need for a concentration in the technical side as it overlaps into the policy side? I am just bringing that forward for the steering committee to evaluate.

Mr. Chairman: Mr. Richmond, you might, with the indulgence of the members, just give us a bit of an idea what previous committees have done with consultants, since Mr. Cureatz brought it up? Would that be acceptable?

Mr. Cureatz: Just before you do that, I was thinking, for instance, on the policy side, if we are looking at nuclear versus hydraulic versus thermal, I think Ontario Hydro has three major possible hydraulic sites, as I recall from the last committee, in northern Ontario. I could see going to that site, flying over and saying: “Now this is great. You are going to have a bunch of electricity but here is the damage you are going to encounter.”

You go over to the James Bay project in Quebec. We hear lots about it. We hear a little bit, I guess, about the environmental impact. But we look specifically at the impact that is taking place there. I do not know whether it is necessary to go out to British Columbia. We do not have to go that far. We can just go to Quebec to see any physical impact. These are the kinds of things I

would like to have in the balance when you finally come up with a policy direction.

Mr. Richmond: OK. There are a number of things that Mr. Cureatz raised. First, let me indicate I was involved with the last select committee. Most of you will be familiar with the work we do in legislative research. In that case, the committee had a consultant. Canada Consulting Group was the consulting firm. They were essentially, to use the sports analogy, the quarterback of the committee. Legislative research provided a support role, background technical studies. Canada Consulting also commissioned other consultants to provide technical information to the previous committee and Canada Consulting drafted, at the committee's direction, the report.

In response to Mr. Cureatz's specific concerns, it is up to the committee, first of all, to determine—and I am sure this committee and the steering committee will thrash those out—exactly what aspects of DSPS, if in fact you are doing DSPS, the committee will deal with.

I agree the committee could focus in on the review of Hydro's projections and then the various supply alternatives. I do not portray myself as an energy expert. I am here to assist the committee day to day in whatever capacity. If that should involve, down the road, drafting the report, most of you know the services that can be provided by myself and my colleagues. It is up to you to decide.

With regard to the role of consultants, there are two primary models I have worked with. The previous committee had the consultant as quarterback. That is one alternative, with in-house staff, legislative research providing support. The other model has been used by other committees; I recall most recently the select committee on the environment, which I believe Mrs. Grier was involved in. In that case, one of our legislative research staff performed this day-to-day role and that committee commissioned various technical experts and consultants as needed. So we can play that role. I certainly do not have any technical or personal preference. We are here to serve the wishes of the committee. Those are really the two major models in terms of the role of consultants.

Once again, it is a question of money or whatever funds the committee has at its disposal. Obviously, if you have consultants on a day-to-day basis, the budget would have to be considered.

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Speaking on behalf of legislative research, we are here to provide whatever assistance we can. It would be unfair for me to portray myself or my colleagues as energy experts, but if you want to have us day to day we can certainly commission the technical experts to come before us. If you want to go the route of the previous committee, having a consultant day to day, that is for you to consider. I do not know whether that responds to Mr. Cureatz's concerns.

Mr. Cureatz: I guess the political reality is, I wonder what the government is thinking. What do they want to do? I am just curious. Are they going to give a few bucks to the committee to hire the consultants or are they going to pass us off and let legislative research do a lot of it? I do not know. Have you thought about that or have you talked to the minister?

Mr. McGuigan: I do not know of any restriction that has been placed upon us. I think, if the committee wanted it, it would be up to the committee to ask and see what happens.

Mr. Cureatz: Mr. Richmond, you would best know yourself, after the steering committee has met or maybe after taking a look at the study, in terms of what your staff can provide, and maybe it would be those areas out of your depth where consultants should be brought in.

Mr. Richmond: It depends entirely on the committee. Just to use an example, let us say the committee chose to review Hydro's projections of future demand, discounting the possible role of demand management or conservation. If you wanted a technical review, I do not think I or my colleagues could, with authority, provide that type of review.

Let us say the committee chose to devote a week to that. If you choose to have legislative research, myself and my colleagues sort of day to day, the committee could invite the appropriate proponents and opponents of Hydro's projections. We could invite deputations from the Ministry of Energy. If the committee felt it needed an independent technical review, I and my colleagues can certainly assist the committee in selecting an expert or a consultant to do that review.

The other model is, as with previous committees, to have a consultant day to day, like the Canada Consulting Group. Before that, they had the Canada Consulting Group and a fellow by the name of Schwartz, a lawyer. This was the one in the 1970s. That is before my time at the Legislature. When Donald MacDonald was chairman, I believe they used consultants in a similar capacity, sort of day to day, largely

running the show. It is a question of what model the committee wants to follow.

Mrs. Grier may be able to comment on the select committee on the environment last year, which had our staff day to day and commissioned, as I understand it, consultants or experts as they felt they were needed.

We are here—I am speaking of legislative research—to serve the committee, whatever model you choose to follow. We will certainly attempt to do the best job we can in whatever way, shape or form you want us to perform our role.

Mr. Chairman: Thank you, Mr. Richmond. I have Mr. Runciman and Mr. Charlton on the list. I wonder if, for the benefit of debate, we could talk about the role of consultants. Mr. Runciman, did you want to comment on that or did you want to bring up a new item?

Mr. Runciman: I can make a few brief comments. I support my colleague's view that it certainly would be useful to have that ability and that flexibility within the committee. I guess I am just not optimistic that it is going to prove useful, especially based on one of the comments we have heard from the minister already, declaring what is going to be done in respect of this committee and the government members following that direction.

I suspect that the government is quite prepared to throw taxpayers' dollars out at this end to at least give the appearance of legitimate concern in these areas and that, indeed, this committee is performing a useful function. But, I guess, based on that speech and a number of other things—look at the last select committee's report and take a look at the select committee on Sunday shopping and how much weight that carried with the current government—I guess I am just not optimistic, but hopefully this is going to be something more than a charade.

I am one of those who feels that if we are going to perform in a meaningful way, I guess, in getting into some of these areas which obviously the government wants us to get into, obviously it is going to be absolutely necessary to retain consultants. I just hope it is not another waste of taxpayers' dollars.

Mr. Charlton: I want to say three things. First, my sense is that Mr. Runciman is right. If the committee were to choose to have a consultant on a day-to-day basis, ultimately that would get approved as it did the last time. I am not sure that is always a useful expenditure of public funds. I am not sure that is necessary in this case.

Personally, having worked with Mr. Richmond and legislative research on a number of issues over the years, I have reasonable confidence that they can adequately serve the committee in its day-to-day operation. Where we may want to deal with the question of consultants—and this will be dependent on what we determine is finally our agenda, those specific things we are going to look at—is we may want to look at having some advance studies done for the committee, as we did with the last select committee between our sitting in the fall of 1985 and our sitting in the spring of 1986.

The committee felt particularly hampered during its fall sitting because there were no preparatory studies done on the specific focuses that the committee was going to be looking at. Between the fall sitting and the spring sitting, the committee instructed, and ultimately commissioned, several specific studies.

If we get to that stage as a committee, of looking at some specific advance work to have done before we sit this summer, then I think the subcommittee could sit down with Mr. Richmond and with legislative research, determine what they could handle of that and come back to this committee with recommendations about perhaps having to farm out some of that work to specific experts. I do not fully see the need for an ongoing consultant to this committee. I think legislative research, and Jerry Richmond specifically, can handle that in very fine fashion.

Mr. McGuigan: Like other members, I have served with Mr. Richmond and have confidence in his ability and the people who stand behind him as well. I prefer, as Mr. Charlton has said, the pragmatic approach. If we see the need for a consultant, I think as members of the committee we should not hesitate at all to ask for it. I think we should want to put the government on notice that this may be forthcoming. I do not see it today as a requirement.

Mrs. Grier: On the issue of consultants, I think it is a little premature at this point because we have not decided what, in fact, we are going to do. I certainly found the model of having legislative research do the bulk of the support work for the committee but commissioning specific studies on technical issues to be a very satisfactory way of proceeding on a fairly complex issue.

Mrs. Sullivan: I agree wholeheartedly with Mrs. Grier and Mr. Charlton. It seems to me that we are putting the cart before the horse. We are talking about the process before we are talking about how we really want to use that process.

From time to time, I think we will need expertise, not only of an engineering capability but maybe of a financial capability. There may be different kinds of consulting requirements we might want to draw on from time to time, but I would like to perhaps spend some time talking about what we want to talk about first and then talk about how we are going to get there.

Mr. Chairman: I think we might have closed the thing on the role of consultants anyway. With that, Mrs. Sullivan, maybe you would like to—

Mr. Richmond: May I make one comment?

Mr. Chairman: Jerry would like to make one final comment on this.

Mr. Richmond: I appreciate the warm comments on behalf of my colleagues. We are willing and will try to the best of our ability to serve the committee, whatever model it chooses.

One of my colleagues who is fairly new on our staff, Lewis Yeager, previously a principal with an environmental consulting firm, will be assisting me if the committee should decide to go the route of commissioning studies. Lewis, with the direction of the steering committee and myself, can assist in study designs, terms of reference, budgets and the like. Whichever route you choose, we are here to be at your service.

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Mr. Chairman: Perhaps we could return to the question of what we see ourselves doing to fulfil the mandate we have been given. Mr. Runciman, you have been on the list for a while. Did you want to address that as well?

Mr. Runciman: Just a few brief observations. I am new to this committee. Sitting back as a legislator and as a private citizen, some things have always concerned me about Ontario Hydro and how we can tie this in. Obviously, the demand-supply question is critical to the future of this province. As policymakers, we certainly have to take a look at it and do the best job possible with the information we can glean.

One of the things that has intrigued me, to say the least, is the whole question of the decision-making structure within Ontario Hydro: how the decisions are made, how the corporation operates, who makes the decisions, how the decisions will ripple through the structure. I am undecided; I just wanted to put some observations out.

Perhaps that may be an even more useful first step, because I think there are questions out there about a shadowy bureaucracy. How does it operate? Is it really an empire-building group within Hydro? How are decisions made and taken? Are they taken in the best interests of

Ontario citizens? I think it might be useful—and this would be something new, really, for a select committee or any committee—to take a close look at how the organization functions and how decisions are taken within it.

Mr. Cureatz talked about travel. I think that is certainly useful. He mentioned a couple of Canadian jurisdictions. We might take a look, not just relating it to what I am talking about but to other aspects as well, at some of the US operations. We may want to go to the Three Mile Island operation. We may want to go to some of the other private sector utility operations in the United States.

I do not want to have anyone say I am suggesting privatizing Ontario Hydro, but I think it may be useful for a committee of this Legislature to take a look at the question of how certain aspects of Ontario Hydro's operations could better serve the needs of the taxpayers of this province, the energy-consuming citizens of this province, if indeed it was privatized. It should not be something that is off limits. We should be prepared to take a close look at those kinds of questions. They could be very helpful to us as legislators, and to cabinet, of course, in future decision-making responsibilities.

I am a little concerned. Obviously, the government has made the decision within cabinet that this is the way we are going to go. We are going to confine at least the initial life of this committee to dealing with this business of political window-dressing, filling in the government back-benchers' time and coming up with something that—

Mr. Cureatz: The opposition's time.

Mr. Runciman: That is right too—and coming up with something that is probably going to be put on a shelf somewhere and be redundant in the sense that we have other groups already taking a look at these questions, whose technical expertise is probably going to carry much more weight than anything this committee can recommend.

I think there are other, more important areas perhaps. Again, who am I to say what is more important? There are areas that strike me as being ones in which we could play a very useful, meaningful role in getting in there and getting into brand-new areas that committees of this Legislature have never touched upon. Let us open up this whole operation to the light of day.

How does Ontario Hydro operate? Who really makes the decisions over there? Let us get some union leaders in here. Let us get some shift supervisors in here. Let us take a look at the whole structure. Take it from the top down, from

the bottom up, whatever you want to do. Let us really open it up and examine it very closely. I am sure we would be in for some real surprises. This could broaden out and touch on all kinds of concerns out there in terms of economic control, the fact that the debt is perhaps out of control. Who knows?

I have heard stories—and I am not going to get into specifics because they are only stories—about widespread waste within Ontario Hydro. These come from rank-and-file employees talking about decisions, things that happen on a day-to-day basis, that are totally ignored by middle- and upper-level management.

I think they are very important questions. I do not want to repeat myself too much. I might as well be out doing something into the wind in terms of putting this position forward, because it is probably going to have the same impact. In any event, those are the views I have. I would like to see us do something innovative, something exciting, something that could have a real dramatic impact on this province in the future with respect to the operations of Ontario Hydro.

Mr. Cureatz: What I would like to see on a practical basis is possibly something tomorrow from Mr. Richmond outlining some of the areas that we could talk about or investigate in terms of that policy direction. Is the steering committee getting together before tomorrow, or is this it?

Mr. Chairman: I do not think it has been decided at this point. It is open to it to do that.

Mrs. Grier: It comes up after we adjourn.

Mr. Cureatz: OK. That is what I would like to see on a practical basis, a few aspects of areas that we could study.

Then they mention about travelling. I brought up Quebec and northern Ontario. Actually, with regard to Mr. Runciman's comments about the size of Ontario Hydro, for years the size of the Tennessee Valley Authority has always been thrown out, which I think is larger than Ontario Hydro.

Mr. McGuigan: That is the one I would like to see.

Mr. Cureatz: I think it would be good to go down to see if there is the bureaucratic mess that we all think Ontario Hydro is. Let us see what they are doing down there in terms of the structure, the bureaucracy, how many states they cover and the environmental impact of their hydro. I do not think they have any nuclear. Anyway, although the mandate says Canada, I would rather go down there, I think, as an alternative to British Columbia and looking at a

dam there, if that was considered. But make a note of that, the Tennessee Valley Authority. I do not think any committee has gone to it. As a matter of fact I am sure that not since 1977 has a committee gone to the TVA, and we keep hearing about it.

Mrs. Grier: I think what we are talking about is what the steering committee should recommend to this committee as its course of action. I live in terror of keeping on reinventing the wheel and really come back to my point that I would like to see this committee move beyond what previous committees have done. I do not as yet, though I am prepared to be persuaded, share quite the cynical view of Mr. Runciman of the committee. My hope is that we can make some recommendations and that they might be listened to by the government, but I think that is going to depend very much on how focused and practical those recommendations are and if our time is limited.

I just want to remind or say to those people who have not gone through this experience before that if you ask Ontario Hydro to come in and comment on the DSPS to this committee, you are probably looking at a minimum of three weeks of presentations by Ontario Hydro, and I kid you not. Then somebody would have to respond to Ontario Hydro, and then Ontario Hydro would have to respond to the responders. Look back at the agendas of previous committees if you doubt what I say.

I think we want to be very careful in focusing on what we think we can usefully do and what we can achieve. I think that decision by the steering committee has to start from the point of looking at the mandate that the government House leader gave to the committee, which is an exceptionally broad one. Do we want to look into the affairs of Ontario Hydro or do we want to look specifically into DSPS?

1530

If we decide we want to look into the affairs of Ontario Hydro, then I think the recommendations of the previous select committee with regard to process and some of the things Mr. Runciman has talked about is an appropriate starting point. Let us not go back before that. Let us start with those and see where we want to go.

If, on the other hand, we decide we want to focus on the DSPS, then I think there are a number of ways in which we can do it. I think it would be very useful to look at the process, and particularly the public process, that Ontario Hydro used in coming up with the DSPS. In the previous committee hearings, it certainly out-

lined to us a process of public consultation and involvement. Everybody's point of view was going to be taken into account.

I think it will be very interesting to review how Ontario Hydro lived up to what it said it was going to do and what kind of process, in particular a public process, it envisages from here on in with DSPS, because this is only an early stage of its decision-making process. It might be very useful if we examined how it arrived at this report and how it intends to proceed with it, and we could perhaps make useful recommendations that would make that a more effective process.

If we decide to look at DSPS, the other thing I think we have to do is to clarify the remarks of the minister this morning, because he talks about a multistage review of DSPS, and it seems to me that if we are going to focus on that we need to know what the internal review by ministries is going to encompass, what kind of time frame and what kind of terms of reference that is going to have.

Similarly with the independent technical advisory panel, what are they going to be looking at? I do not see any point in our looking at the same thing. Let us know what all these are going to be doing and then see where we can best fit in, if DSPS is going to be our focus.

I do not at this time have any real preference. I shall leave it to the steering committee as to which direction we go, but I think we have to begin to narrow the terms of reference from the very broad mandate that we have been given by the Legislature.

Mr. Charlton: Just to pick up on Mrs. Grier's comments. I think she has made a number of useful comments. She specifically referred to what is chapter 9 in the DSPS report, public and government consultation. It may be useful for us to have a serious look at how well that consultation process worked and whether the kinds of public presentations that were made are reflected in this document itself—in other words, whether it was a successful avenue of input for the public to the Hydro planning process. I sensed, from all of the discussions so far today, a fairly clear consensus that the committee wanted to look at questions of strategy and policy rather than at all the technical aspects of this report.

I sense as well that there are going to be, as there always is, different specific things that different members will want to look at. Mr. Runciman has already talked about one of the things that he is interested in and Mrs. Grier has thrown out the public consultation thing.

Looking at the contents page of the DSPS, where we have the 14 chapters set out—the last two chapters being reference chapters—I think that chapters 1 to 7 essentially deal with the technical questions around Hydro and Hydro's process, and chapters 8 through 12 essentially deal with the questions of policy, specifically government and public policy. If we can focus our comments this afternoon and tomorrow on those areas of policy in chapters 8 to 12 that people are interested in dealing with, we may be able to give some reasonable direction to the steering committee in terms of coming up with an agenda that makes sense and has some useful focus and some useful goals in mind.

Mr. South: There are three areas that have concerned me with regard to Ontario Hydro. One is future negotiations for electrical energy outside Ontario. In the past, Ontario Hydro has carried the ball. They have done the negotiating and I do not think this is right. I think they enter these negotiations with a very prejudiced point of view. I think Ontario Hydro believes its own self-image is best served by seeing itself as a generator of electrical energy, not just as the transmitter of electrical energy.

An area we should investigate is the possibility that future negotiations for electrical energy outside Ontario should be carried out, if I may say it, by politicians, with the advice and support of Ontario Hydro experts. I think the politicians should carry the ball.

Another area of concern is that I believe there is a lot of merit in what has been discussed before: considering two separate entities for distributing electrical energy in the province, one the generating entity and the other the transmitting entity. There is a lot of merit in separating what is now just a common operation carried out by Ontario Hydro. We see this when Ontario Hydro develops buy-back rates for electrical energy. They are not competitive. They are not conducive to industry. They are not conducive to having municipalities go into these energy-from-waste programs. They always seem to be too low, and Ontario Hydro comes out with some very good reasons why they should be very low.

I think that when Ontario Hydro conceives itself to be both the generator and the transmitter, it is muddying the waters. This gets back to Mr. Runciman's point of view about the ideal of getting free enterprise more involved in it. Perhaps we should have a transmitting entity that could say to the public at large, a transmitter of electrical energy in Ontario that was saying to the province: "Why did people not buy outside the

province? By year so and so, 1990, we need so many megawatts of electrical energy. You as individuals, you as industry, anybody, put together a consortium and tell us what you can supply us that energy for." In other words, make the supplying of electrical energy competitive.

The generating arm then could also get involved in the competition by saying what it would generate that amount of electrical energy for. We would have a healthier, more competitive, cost-effective approach to where we are going to buy our future electrical energy.

The third area I would like to see explored is future planning for electrical needs. In the past, Ontario Hydro has been the predominant entity that seems to develop a plan and then we all react to it. Ontario Hydro then is the main proponent. It is also the most prejudiced proponent. I think we should look at ways in which we can broaden who does the future electrical planning needs of this province. We should broaden the scope of that to see that Ontario Hydro does not monopolize it, as it seems to do now.

I think one area we might consider would be utilizing more the individual electrical utilities and letting them say what they need in the future in the way of electrical needs and letting, say, the Ontario Ministry of Energy co-ordinate their response.

1540

I just feel, as I say, that Ontario Hydro comes out with these self-fulfilling projections or wishes of what the future electrical needs of Ontario will be, and once it has made these projections one way or another, it is going to see that those projections are fulfilled. You cannot help but get that feeling.

Those are the three areas I would like to see discussed; that is, the future negotiation for electrical energy outside of Ontario should be carried out by a body or a group other than Ontario Hydro; Ontario Hydro should be along there as experts. We should discuss the merits of two separate entities for supplying electrical energy in the province, one the generating entity and another a transmission entity. We should discuss some way of diminishing the role of Ontario Hydro in the planning of the future electrical needs of this province.

Mr. McGuigan: Certainly, the members have a wide-ranging number of interests, and this is the place to bring them forward, but I think our main job is to deal with this report that is front of us, take those strategies and put them into a plan to cover the next 25 years.

I do not think the government is much interested in turning Ontario Hydro over to private enterprise. I guess my own view of the bureaucracy of Hydro is the same as any other bureaucracy, whether it is the Workers' Compensation Board, the Liquor Control Board of Ontario or whatever it is. They all develop a life of their own, a system of their own, and you can investigate them from now until the end of the world and I do not think you would find any great revelation that is going to change how bureaucracies work. They are praised and condemned, depending on who you are, and I just do not see any useful point in pursuing that, because I am sure you will find an awful lot of resistance on the part of government members.

I think our job is to look at this book. For instance, one of the strategies, they say, is that conservation, energy saving, will be more or less in the future. We have now mandated the requirements, what the energy criteria of household appliances and so on shall be, but we are not going to retrofit, or at least they do not see retrofitting in their strategy. I do not see it on appliances very much, either, but perhaps on housing and factories in a number of instances they may want to get into retrofitting.

I remember, and this is going back quite a few years ago, when we had the—I see it is 60-cycle now. What were we? How many cycles were we?

Interjection.

Mr. McGuigan: Anyway, it was a time when the lights flickered because of the low number of cycles, and then right after the war they moved in and retrofitted all the electrical equipment right across this province, with great efficiency too. Within a couple of years the whole job was done, so retrofitting is not impossible.

I just throw that out as one of the areas that we may want to look at. It is all contained in this study that has already been done.

In summary, I think we should deal with what is in front of us.

Mrs. Sullivan: Clearly, it is part of the public process in economic and energy policy formation. We have to look at the Hydro report before us, and I would like to suggest that the subcommittee consider looking at chapters 8 to 12 initially. Then, perhaps latterly, after the technical committee has had a chance to review the technical aspects of the report, at that point we might want to go back to look at the earlier sections.

In particular, in relationship to the report, I would like to go through chapter 12, which really is the planning principles that Hydro is looking at

effecting over the next period of time, and review that chapter in association with a review of the planning principles applied in other jurisdictions. I do not know whether the Tennessee Valley Authority is one to look at, but that is the sort of advice I would like to hear. I suspect that Quebec is one place we would like to look at; perhaps Manitoba as well.

One of the things I found absent in that particular section of the report was that Hydro has been doing a great deal of international consulting on the technical side and indeed has participated in several trade missions to China, as well as other places. I am not certain whether there is a conflict with its initial mandate. If there is, I would like to talk to Hydro about that and how it intends or proposes or would like to see that solved.

I suspect we do have expertise and technical proficiency that is marketable, that has been proven. Whether it should be done under the same aegis as generation for our own local provincial consumer is another matter—perhaps a separate body—but I would like to look at that. I did not see that in section 12, which is part of the principal aspect of the report.

At some point, I would certainly also like to see us discuss the accountability of Hydro and whether it is financial accountability but, as well, a continuing accountability to the public. I presume it could be included in the discussion on chapter 12 or one of the earlier chapters, maybe chapter 9 where that is discussed. I think it would be a useful matter for us to look at.

Mr. Charlton: I have a couple of brief comments. Most of the topic areas that members have mentioned fit fairly well within the things that the study itself looks at, even to the extent of all the comments that Mr. South made about looking at an alternative approach to how to deal with making the right decisions around imported power and whether a utility which views itself as a generator can appropriately do those kinds of negotiations. As I see them, all those things fit fairly well into the policy and strategic sections of this report.

Just a couple of brief comments on things that Mr. South raised, so that we do not get sidetracked as a committee. To some extent the kinds of things he has suggested are things that past select committees of this Legislature have already looked at in the very recent past. I agree wholeheartedly with the comments of my colleague Mrs. Grier that no matter what particular issues we decide we are going to look at, we have

to look very carefully at what has already been done and not do it all over again.

To the extent that we can, we have to attempt to review what has been done, review the knowledge that exists already in terms of committee work that has gone on in the past, and try to move on from both the knowledge that is reflected in those past studies and the recommendations that are reflected in those last studies.

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I just do not see us spending a lot of time getting caught up in doing something for a second or a third time that, in effect, has already been done. I think that is part of the work we are going to have to call on staff to do so that we do not get caught in that corner of going back over old stories, if you like. We want to try to make this committee a committee which, in effect, takes the next step in the whole debate around questions of accountability of Hydro.

I certainly have no problem with looking at the questions of accountability of Hydro. I have no problems with looking at whether we should have more or fewer private, parallel generators in this province. I certainly do not want to go back over all of the ground around those questions, both of which were specific questions that the previous select committee looked at.

If we are going to deal with those kinds of questions, let us ensure that we learn from what has already been done in select committees and that we take those topics to the next step rather than using this select committee as the process to educate the members of the committee, when in fact we have documentation that we can sit down and learn from between now and our hearing schedule, which likely will not be until the summer.

Mr. Chairman: Any further comments? I note that it is now approaching four o'clock and some members had indicated they had commitments after four. I am wondering how the committee would like to proceed. It seems we probably have two options. The first would be for the committee to reconvene tomorrow and continue these discussions. Alternatively, the steering committee could meet tomorrow and begin to talk about what we have spoken of today. I do not know which way the committee would like to go.

Mrs. Grier: I wonder if it would be helpful if the steering committee met in the morning and perhaps could come back and touch base with the committee in the afternoon. There may be clarification or directions that the steering committee would require. I am reluctant to say

we do not need to meet again and let the steering committee do it, because I am not sure that we have fully canvassed all of the alternatives. If that is acceptable, I would make that suggestion.

Mr. Runciman: Just so there is no impression that any decisions are going to be made tomorrow, from my own point of view I think I would certainly like to sit down with Mr. Cureatz and I think both of us would like to discuss this matter with our caucus colleagues before we put any final position with respect to what we think the committee should be looking at.

Mr. Chairman: Mr. Runciman, I did not really think we would come to any final conclusions tomorrow. I would like to try to get some more focus so the steering committee can pull away where it feels, so it at least can draw together what it feels the committee would like to do. Mr. Charlton, did you have anything you wished to add?

Mr. Charlton: I was just going to add to those comments that my understanding of the discussions we had earlier and what everybody seemed to nod their heads to earlier in this meeting was that today and tomorrow we would try and provide as much input for the steering committee as we could, that the steering committee would meet between now and the time the House comes back in April and at that time bring recommendations to the full committee to set the specific agenda. I think there will be lots of time for consultation with the respective caucuses and House leaders and so on before the final decisions are made. I think these two days are for the purposes of maximizing the input in terms of the range of things people are interested in.

Mr. Chairman: Perhaps we could do this. This room is available to us. The steering committee could meet here at 10 tomorrow. Maybe I could ask Mr. Richmond, who I see has been taking copious notes, to produce a bit of a summary of what he heard today. I do not think Hansard will be available to us by tomorrow morning. Then the committee could meet at two o'clock tomorrow afternoon and the subcommittee could report and we could continue these discussions. Is that acceptable?

Mr. Charlton: There is one other matter I would like to raise, not for the purpose again of a definite decision this afternoon, but I would like to raise it so it becomes a part of the thinking of the committee and the subcommittee. That was the comment by the Premier in early December about this committee reviewing the appointment of the chairman of Hydro to replace Mr.

Campbell, for the purposes of questioning him and presumably satisfying itself that the new person was an appropriate choice. I am just wondering how that is going to fit into our planning process. We should think about that as part of what, at least indirectly, has been referred to this committee.

Mr. Chairman: All right. I will declare this meeting of the committee adjourned until two o'clock tomorrow in this room, and I will call a meeting of the steering committee for 10 o'clock in this room tomorrow.

The committee adjourned at 3:56 p.m.

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SELECT COMMITTEE ON ENERGY

- Chairman:** Carrothers, Douglas A. (Oakville South L)
- Vice-Chairman:** McGuigan, James F. (Essex-Kent L)
- Brown, Michael A. (Algoma-Manitoulin L)
- Charlton, Brian A. (Hamilton Mountain NDP)
- Cureatz, Sam L. (Durham East PC)
- Grier, Ruth A. (Etobicoke-Lakeshore NDP)
- Matrundola, Gino (Willowdale L)
- Ray, Michael C. (Windsor-Walkerville L)
- Runciman, Robert W. (Leeds-Grenville PC)
- South, Larry (Frontenac-Addington L)
- Sullivan, Barbara (Halton Centre L)
- Clerk:** Manikel, Tannis
- Staff:**
- Richmond, Jerry M., Research Officer, Legislative Research Service



No. N-2

Hansard

Official Report of Debates

Legislative Assembly of Ontario



Select Committee on Energy
Organization

First Session, 34th Parliament
Tuesday, March 1, 1988

Speaker: Honourable Hugh A. Edighoffer
Clerk of the House: Claude L. DesRosiers

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Contents of the proceedings reported in this issue of Hansard appears at the back, together with a list of the members of the committee and other members and witnesses taking part.

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Tuesday, March 1, 1988

The committee met at 2:08 p.m. in room 228.

ORGANIZATION (continued)

Mr. Chairman: I call this meeting to order. The steering committee met this morning and you have before you two documents which I guess are the result of that; the first with some yeoman help by Mr. Richmond, who claims he works all night and we will take that at face value.

Mr. Richmond: Oh, no.

Mr. Chairman: We have a summary of our discussions yesterday. He has brought some order to our discussions. The select committee has—

Mrs. Grier: We only got two over here.

Mr. Chairman: You only got two? Can you get a set for Mr. Cureatz? This morning, the steering committee discussed this and I think it would be useful if we could focus our discussions today on that document.

You also have before you a second document, which is just a tentative time frame for hearings, to give an idea of what they might look like. I do not think this is anything near completed and it may have to be adjusted, but it is just to give the committee a bit of an idea of what the timing of the committee hearings might look like.

If we could turn back to this—do you have a set now, Mr. Cureatz?

Mr. Cureatz: Yes.

Mr. Chairman: To get back to the memo from Jerry Richmond, it is really divided into two parts. The first, which is headed "Major Issue," is a discussion of the demand-supply planning strategy study. The second, beginning at the bottom of page 2, is "Other Miscellaneous Issues" that the committee could deal with after it has dealt with the DSPS.

Turning to the DSPS study, the first area I think it might be helpful to focus the committee's discussions around is the role of the committee. We had a number of points of view expressed yesterday. That item (i) under "Major Issue" at the bottom of page 1 is more or less of what seemed to come out of that. Now, I am wondering if there are any members who want to discuss that, have anything added or feel that

perhaps there is something that has not been emphasized that should be. I will give you a second to have a look at it.

Mr. Charlton: Can I get a copy of the amended version?

Mr. Chairman: You should have a copy before you. Maybe that is a lesson in handing things out before the meeting.

Mr. Cureatz: What are we supposed to look at? This one?

Mr. Chairman: Yes.

Mr. Richmond: There is an earlier one. Do not get it confused with that. There was one this morning.

Mr. Chairman: No, that earlier one was only given to the steering committee. That is really saying that the role of this committee would be to provide an opportunity for public and political review and assessment of the draft demand-supply strategy. That is really focusing on chapter 12, which is a statement of principles. The committee would also invite relevant witnesses or commission relevant studies to receive appropriate technical backup or assessments to do that.

There was a feeling that we needed to make sure that the role we were taking on as a committee dovetailed with the independent technical advisory panel and the interministerial review of DSPS that the Minister of Energy (Mr. Wong) has announced, so that we are not duplicating their efforts. We would hope that the findings, even the preliminary findings, of the technical panel and the interministerial review could be made available to this committee to allow them to be taken into account in its deliberations.

I guess the final note there is that there might be a possibility of going beyond the one-year mandate if we cannot deal with everything on this plate.

Are there any views of members as to whether that is a good focus, whether the focus should be expanded or items added to that role?

Mr. Cureatz: Just being a humble little lawyer from the village of Newcastle, I am trying to equate—is this supposed to be a more detailed version of this?

Mr. Chairman: Yes. This document on my letterhead is just a time frame that I put together on what our hearings might look like, to give an idea of how much time we might be spending. There is nothing really set in that. I think, based on this morning's discussions, we may even have to adjust what I did. What we are really focusing on right now is the memo from Mr. Richmond.

The only information I am going to take from this time frame is that we might hope to spend six to eight weeks on this. It might be nice if we can come up with an interim report on the DSPS by late fall.

Mr. Cureatz: The first week of activity on your list, to tour various facilities—actually I think that is very worth while. On the other hand, I do not see much sense, for instance, in going to the Bruce nuclear and Pickering nuclear generating stations. I mean if you see one nuclear station, they all look like a big building and you look through TV monitors.

Mr. Chairman: Yes.

Mr. Cureatz: What I would be interested in is: OK, we touch base on some of those things, but prospective sites would be, I think, worth while for the committee; looking at other alternatives besides nuclear or where nuclear stations are planned, not necessarily by any means in terms of the go-ahead but down the line kind of thing, versus other hydraulic stations in the north; and, again, the environmental repercussions of the possibility of putting in such a station, so that we have a better understanding.

I know Mr. Charlton is concerned about energy saving, which is a whole area unto itself; but on the other hand, I am concerned about the sawoffs that Ontario Hydro and we as a committee have to take a look at in terms of nuclear, hydro, environment, nuclear problems, disposal of wastes, thermal, acid rain—those kinds of sawoffs. I hope we can work in something like that.

Mr. Chairman: I think we can.

Mr. Cureatz: A tour of a plain site: you know, the trees, the river that is going to be flooded, the thousands of acres that are going to go under the water.

Mr. Chairman: I think we could work that into the agenda when we discuss what we want to look at.

I was hoping we could, perhaps at this moment, talk about what we feel the committee is going to accomplish, because out of that decision you end up with deciding what it is you want to look at and whom you want to speak to.

The comments at the bottom of page 1 of that report from Mr. Richmond were focusing on what the committee felt it was going to accomplish and what the report might be speaking about.

I take note of what you said, Mr. Cureatz. I think we were hoping to arrange the travelling and briefing of those members who have not seen those kinds of facilities to bring us all up to speed, because I think we are at different levels of experience in dealing with these types of projects. Some people may not have even seen a nuclear project; others may have seen too many of them. I would like to get us all on an even base.

But I think that is kind of a given; I am wondering if we could discuss right now the role we see ourselves fulfilling.

Mr. Charlton: Mr. Cureatz's wife can see him coming home at night.

Mrs. Grier: He has seen so many nuclear plants he's all lit up.

Mr. Cureatz: In anticipation, Mr. Richmond, I notice on page 2 that a specific chapter is designated. Is that, in your evaluation, a good approach, a sort of checkoff?

Mr. Richmond: I do not know. It is not for me, I guess, to say whether it is good. It is just thrown out for the committee's consideration, and I guess Mr. Cureatz will get to that in a moment. That was my understanding of some of the suggestions that came out of yesterday afternoon's deliberations. It is not carved in stone.

Mr. Cureatz: No.

Mr. Chairman: This is just an attempt to organize out of yesterday's discussions some further discussions today. As I said yesterday, the steering committee will be meeting after this and will come up with what I hope is a very detailed agenda that can be presented to the committee along with the budget, but in order to do that we need to get some direction from the committee concerning what the committee feels is the ultimate role we are playing and how we should accomplish that. On the point of the role, do you have—

Mr. Charlton: Just to make that absolutely clear to Mr. Cureatz, what you have got before you, which is being labelled Mr. Richmond's document, is a document that came out of his notes from the comments that members of this committee made yesterday afternoon; and then it has been amended by the discussion we had in the steering committee this morning, so it is in no way a document carved in stone.

What we want to do this afternoon is to discuss it further to hear the views of the committee about how they feel about the direction this set of proposals seems to be taking us. Are there things that are missing? Are there things in there that we do not need? All of that kind of stuff, so that then the steering committee can go away and hammer out a very detailed agenda.

Mr. Chairman: The challenge I find as chair is that our mandate is huge. We need to focus it to start and then go step by step.

Mr. McGuigan: We would have concerns with Mr. Cureatz's wide-ranging view that we visit a possible nuclear site. I do not know whether they have such a thing or not, but if they do and we visit it, you can imagine what that would set off. I certainly would not mind seeing a hydraulic site in the north, but probably we could see it on a map or have a good explanation of it that would be as good as going there, certainly to satisfy ourselves that we are going in the right direction: should we be going hydraulic instead of nuclear? We should look at those possibilities.

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Mr. Cureatz: I am thinking of page 2, "Chapters 8 to 12." I have not had a chance to review it a little more thoroughly. I was worried that we would be limiting ourselves if we say, "We have to cover chapter 5 today," and chapter 5 winds up to be of about five-minute interest and the day is shot kind of thing. I am sorry. Now that I see that you have it grouped in categories, so there is probably a little more to—

Mr. Chairman: I think the intent is that the chapters imply certain subject areas that we deal with in just a short form.

Mr. Cureatz: I was only thinking, we are dealing with various objects and we do not have to go to a proposed nuclear site, but for me I would feel comfortable going to a proposed hydraulic site. We did the helicopter thing; remember that? There is something about looking at it and then you have an appreciation of balancing off to go hydraulic, or do we go for more pressure to have hydro spend more money on energy conservation instead of flooding 12,000 acres of land.

If Mr. McGuigan does not want to look at a proposed nuclear site that is fine with me. Let us not get anybody upset.

Mrs. Grier: I think the outline of the role of the committee is very satisfactory. On the last point, the continuation, I think we are going to need to look a bit at the other section on other miscellaneous issues and determine some priori-

ties for our other issues. If we are trying to persuade people that we ought to be allowed to continue, then I think part of that persuasion is saying what we see our next priority should be. I think we should spend some time at some stage getting into that.

On the first three points I think they are all, as I say, quite appropriate.

On the question of looking at things, I suspect that when we come right down to looking at the demand-supply planning strategy, it is going to be a debate between energy efficiency and management and generation. At a later stage will come the debate between nuclear, thermal and hydraulic and what might be very useful to look at is some jurisdiction—and I see the steering committee has looked at some of them—where alternatives other than more generation have worked, because that is what we cannot look at in Ontario. If we are looking at things in Ontario, we are going to be looking at what Ontario Hydro has already done, whereas I think what we do not know enough about is what other jurisdictions have done and have done successfully. If there is anything new to look at it would seem to me that it would be that rather than internally.

Mr. Charlton: Just picking up on that issue and taking it just the one step further and to make it very clear for all the members of the committee, I agree with Mr. McGuigan that I do not see any point in this committee going as a committee to Darlington, Pickering or Bruce again.

On the other hand, there are members of this committee who are new members who have never seen one of Ontario's nuclear plants. That kind of tour can be arranged outside of the committee time for any afternoon that members might want to go. Hydro is very accommodating when it comes to that kind of thing so I think we can very easily arrange that.

I think I agree with Mrs. Grier. If you look on page 2 under "Issue:," about mid-page, where we have suggested some potential sightseeing, if you like, consultation that may be of some benefit to what the basic deliberations of this committee will be, I think that is a much more useful approach to the committee's travel. As I said, in terms of viewing Hydro's facilities, that can be easily arranged for any member of the committee who might be interested.

Mr. McGuigan: I think members who have not been through a power plant should actually go through it.

Mr. Charlton: They should probably look at one of each; a hydraulic, coal-fired and a nuclear

plant and that is easily arranged. In fact, it could all be done in one day if you want to do that.

Mr. McGuigan: I think it should be done.

Mrs. Sullivan: I appreciate the work that was done by that subcommittee in putting this paper together. I do like the chapter approach in section (ii). I wonder if we are going to be utilizing expert witnesses and paying to bring them here, in which case some of the travel may not be necessary. That may be a better way and a more feasible way of approaching some of the questions that we may want to ask, for instance about the assumptions behind the strategic planning development, not only in this jurisdiction but also in others. I think that might be a useful approach.

Mr. Charlton: I have just a brief comment on that. I think you have made a useful point. There is some benefit in both approaches. It depends on what it is we are going to look at whether taking the whole committee somewhere is cost effective or not. You are right about that. There are things we could be looking at for which it may in fact be better to try to find somebody from that jurisdiction so we can pay an individual to come here and provide us with information. That is exactly what our committee did the last time. There is place for a good mix of both.

There were two suggestions I made this morning that are in that list. I made them because they might both be of interest to members of the committee. One is the Bonneville one and the other is the California cogeneration one. It is my view that of those two, it would be pretty much a waste of time going to California—we can get that kind of information from that jurisdiction—whereas the Bonneville trip may in fact be a worthwhile one because you have a major concentrated conservation project there that we could look at in very significant detail and begin to understand its ramifications.

Mr. McGuigan: Talk to them and get their views.

Mr. Charlton: That is right.

Mr. Chairman: We have sort of shifted. Obviously, there are no additions and that description of the role is acceptable to the committee, so if we could turn to page 2—

Mr. Cureatz: Perhaps I might comment, now that I have refreshed my memory on Bonneville. I appreciate my Liberal colleague's comments. You are right that there is no sense in tearing all over the country just for the sake of doing it, but there is a role to be played for that kind of mix, with a little bit of travelling, on-site appreciation

and expert witnesses. The expert witnesses who attend have blinders on in their own way when they are giving evidence. It gets a little tedious and boring and one gets sceptical or overly appreciative. I remember Pat Reid saying—I cannot believe I am saying this but I am saying what he used to say—that there is nothing like going there and really finding out.

As I said yesterday, I have sat on so many select committees of energy looking at so many aspects of Ontario Hydro that I would not mind finally getting something worth while accomplished. If it is supporting a Bonneville situation in Ontario, let us do it. If it is dismantling Ontario Hydro and making transmission lines in one sector; oh yes, let us go for the bundle here, absolutely.

Mrs. Grier: You have been saying that through all your years of looking at Hydro, have you?

Mr. Cureatz: That is right. After all this time—

Mrs. Grier: Now it is finally being listened to.

Mr. Cureatz: After 11 years, we are back at square one. Now we have the second chance of doing it, let us do it right.

Mr. Chairman: I thought we were going to narrow our role. We seem to be expanding it here.

Mr. Cureatz: I any event, a bit of travelling would not hurt, especially in some different innovative areas, because we are captured by Ontario Hydro. We only know what they tell us here in Ontario. Unless we get out and have an appreciation of what other areas are doing, then we really will not have an appreciation, notwithstanding that we might have expert witnesses who come in. I can tell you that Ontario Hydro is very innovative and it will come back the next day with a slew of staff who can refute and rebut the expert witness. I am just advising my Liberal colleagues that if they got the word, no travelling, from the Minister of Energy or the Premier's office, they can go whining back and say, "Maybe there is something to it if you fellows really think we are going to do something with Ontario Hydro."

Mr. McGuigan: At least we have their attention now, Sam. We never had their attention until now.

Mr. Cureatz: OK, but do not get caught by them; sort of sleepily doing what they want you to do.

Mr. Charlton: Do not let Hydro do to you what it did to Sam.

Mr. Cureatz: That is right.

Mr. Chairman: Perhaps we should not follow that one up too far.

Let us turn to page 2 then, the second portion of the discussion on the demand-supply planning strategy. We have kind of got into it already. There are really four groupings of subject areas set out there. The first, which is labelled chapters 3 to 6 in chapter 4, I guess deals with the technical side of that report. This is where our role vis-à-vis that independent advisory panel and the interministerial review that the Minister of Energy has set up might come into play.

I think, or it was felt this morning, anyway—I think even with those activities—that the committee can play a useful role by allowing public input on those technical questions and providing a forum for any groups that would like to testify and give their viewpoint on, I guess, the technical backup or the technical basis for Hydro's report. Not necessarily leading this committee into a detailed review of its own, because it sounds as if that is going to be done; and I would hope that we ourselves can be presented with the result of these panels and get the result of that information at a later point and make it part of our report.

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So I am wondering if any of the committee members have any comments on that particular aspect or how they feel we might want to deal with those public hearings, if indeed we want to deal with them.

Mrs. Sullivan: I think we should emphasize that indeed we do want to hear from the special committee that was set up by the minister, that I think it is very much a part of our work and we should have an evaluation of their technical matters in this report.

Mr. Chairman: We should make it clear that we would anticipate receiving that from the minister. I guess on that tentative outline that I had made there was a week set aside for that. That might give an indication of the emphasis we would place; it is a portion of what we are going to do and allow that forum.

The next part, I guess, started turning to the review of the—I guess the next piece is how Hydro might have arrived at the conclusions, the public consultation and the criteria it was using to evaluate its options, and we might take some testimony on that. I wonder if there is any comment. Mr. Charlton?

Mr. Charlton: I would just like to repeat for the whole committee's purposes the comments I made this morning on the question of the criteria used to evaluate the options. We had a fair bit of testimony two years ago before the select committee on the criteria Hydro intended to use to evaluate the options. I do not want to see this committee go through that, reinventing the wheel again.

I would like to see out of research come a summary of what was presented to the last committee that can be made available to the members well in advance, and then the way in which this committee approaches the question of criteria used to evaluate the options is to determine: (a) whether Hydro did what they said they were going to do and (b) whether it was appropriate and effective, as opposed to going through the whole process over again.

Mr. Chairman: Perhaps we could ask Mr. Richmond to—if you have nothing else to do. Perhaps he can start, because I think that would be a very useful background for all the members to produce a summary of the last committee's report in these areas.

The committee would then be turning to questions of various options available and getting some testimony on the types of options that face Hydro. That is where we started getting into, I guess, the discussion of travelling and looking at what has been done in the Bonneville Power Administration, where they had an intensive effort at putting in conservation techniques, insulating houses and so on to reduce demand—this is demand management—and what other authorities are doing in terms of travelling and how they view their approach to meeting energy demands in the future.

Mr. South: Excuse me. Where is Bonneville?

Mr. Chairman: That is in Oregon, I believe.

Mr. Charlton: Bonneville Power is a federal public utility agency. It is incorporated federally in the United States. It is much the same as the Tennessee Valley Authority and it covers the four northwestern states. The specific project we are referring to is in Oregon.

Mr. Chairman: Are there any thoughts of the committee as to additions or perhaps a reorganization of that type of approach? Is that kind of philosophy meeting acceptance with the committee?

Mr. McGuigan: I would say so.

Mr. Chairman: You know, I think that as the subcommittee develops this we undoubtedly are going to find that we might shuffle; as we get into

the detail we may find where we are headed. But I would like to get some focus so that the subcommittee can take away from today's discussions some good direction and come back with a report.

Mr. Matrundola: I believe we should also leave the agenda somewhat open for other thoughts that come in the future. I do not think we should lock into the agenda what we are going to discuss. Other thoughts, other things of benefit to this committee may come up during the session that we may want to discuss.

Mr. Chairman: I think we have to be flexible.

Mr. Matrundola: We have to be somewhat flexible.

Mr. Chairman: Yes. I think we are talking only about structuring the first chunk of what we think we want to do with it. This would not fulfill the committee's mandate, I do not think, or take it to the end of its life.

Are there any further comments, thoughts or additions of people; or other areas that members might feel we should be looking at?

In summary, then, I think the committee really sees its role as attempting to produce for Hydro a commentary on the planning principles that Hydro has set out in this report, together with some report on public input, public criticism or public support for the technical analysis Hydro did in coming up with the first half of this report. Is that a fair two-sentence statement?

Mr. Cureatz: Try that again.

Mrs. Grier: Yes. Try it again and see if the process by which Hydro arrived at the conclusions could be added to your two-sentence summary.

Mr. Chairman: OK. I think there are two goals that I see, anyway. One would be to come up with a commentary on what was really chapter 12, which is the end result of this report, which is the principles Hydro would hope to use to come up with a plan for us in the future. We are not coming up with that plan; we are coming up with principles that should be put into play to make it.

The second one, if we look at the first part—I guess it is chapters 1 through 6, or 3 through 6—is a technical analysis of the present situation and some of the options available to us. There is already going to be technical analysis done by other panels. We could provide a forum for public input into that process and then add in the technical as part of our report so we are getting that public side. We ourselves are not necessarily going to delve tremendously deeply. We would have to delve to some extent into the technical

side just to receive that testimony, but it would not be a prime focus of what we are doing.

I guess what you are saying, Mrs. Grier, is that we do some review of how Hydro—

Mrs. Grier: No. I think your first sentence encompassed my concern, which is the principles Hydro used to get to chapter 12.

Mr. Chairman: OK.

Mr. Charlton: There is the one additional thing that I raised this morning that I think the committee has almost an obligation to do, and that is basically to support its predecessor and do a follow-up on the recommendations of the last select committee, especially those recommendations that reflect directly on the demand-supply planning strategy that has been developed to this stage and the recommendations that basically have not been fulfilled in that report. We talked about several of them this morning, and I think it is important that we not just let the work that has already been done lie uncommented on.

Mr. Chairman: I think Mr. Richmond is going to produce a report for us, and we can put that before the committee and deal with it.

I wonder if some comments with respect to timing might be useful, and then perhaps we could deal with other issues.

Mr. Cureatz: Just before we go into that, looking at miscellaneous items, I suppose item (iii) was Mr. Runciman's concerns. He has left. Was that right? "Decision-Making and Accountability of Hydro"?

Mr. Chairman: I think it was, yes.

Mr. Cureatz: "Safety and Security of Power Supply." Now the Liberals came out and they are going to have some kind of expert who is going to run around and look at the safety of nuclear plants.

Mr. Chairman: I think that is Mr. Hare's report?

Mr. Cureatz: Is that it? Is this Kenneth Hare?

Mr. Chairman: Yes, that is it.

Mr. Cureatz: He is going to be a witness, maybe?

Mr. Chairman: Well I think it is possible that we could read through his report when it comes out. I think as part of the second phase of how we see our mandate here though; I do not think we want to get that interspersed with the DSPS.

Mr. Cureatz: Right.

Mrs. Grier: Yes, and I think we need to have some discussion of the priorities of those—one, two, three, four.

Mr. Chairman: Yes. What I wanted to do right now was maybe just get some input into the timing of how we are going to deal with the DSPS, and then we could turn to these miscellaneous issues and chat a bit more about them and the priority that we would like to place on them. How does that—

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Mrs. Grier: I think it is going to be difficult to talk about the timing until we are a little clearer as to the time frame that has been given by the government to the independent technical review and to the interministerial one. As a committee, I think we need to give you some specific direction to enable you to request of the minister something concrete as to the terms of reference to those committees and how they might be expected to operate.

I am a little concerned about leaving that loose out there, otherwise we may find ourselves in fact paralleling what somebody else is doing; or having set up a timetable only to be told a month from now that the other committee has not even met or been appointed. I think I would like to see us give you some clear direction, as chairman, to seek from the minister some assurance, and if possible get them on to our same timetable so that we are all doing the same thing at the same time.

Mr. Chairman: I have been given to believe that these reports may be coming out in midsummer.

Mrs. Grier: One is often "given to believe."

Mr. Chairman: I know "one is often given to believe," and at this point that is what I have been given to believe, so I suppose—

Mr. Charlton: That could be as much as a year early.

Mrs. Grier: That they will be out this summer? I think I would like to make a specific and formal request to the minister for an explanation to the committee of the terms of reference and timing of both of these reviews that he has initiated.

Mr. Charlton: We should point out to the chair on that—

Mrs. Grier: Is that the motion or do you want to formalize it?

Mr. Chairman: I think I will make that request of the Minister of Energy to get some specifics from him as to the mandate he has given these groups and the time frame under which he would like them to operate. I think it fits in with what we are talking about, what I have been given to believe.

Mr. Charlton: By way of information on that very matter, I guess we should point out to the chairman that the demand-supply planning strategy, which we are going to be reviewing, was precisely 12 months late.

Mrs. Grier: We were given to understand it was late.

Mr. Chairman: We were given to understand it would be out a year before it came out. We will have to build into our time frame, then, a certain flexibility if what we are given to understand does not, in fact, become reality. Is that the message I am getting?

Why not speak in terms of timing, given the understanding, to use that phrase, that we will see reports in the summer. It would be nice, I think, to try to come up with our interim report on the DSPS by late fall. I think there is some need to get this back to Hydro so that it can be dealing with it. To accomplish that, if we turn to this document that I did, which was just a possible time frame, I think the types of tours of facilities in Ontario that members might want to take, the background briefings from Hydro and the Ministry of Energy and that type of background; reports on previous committees, that sort of thing; if we could get that done by the end of June, something along those lines, it leaves us in a position, if the committee sees fit and we get permission, to have a look at other projects.

We have talked about the Tennessee Valley Authority and we have talked about Bonneville Power Administration. We have talked about some other things we might want to look at as projects. We might take some opportunity during the summer to do that. I am hoping, with members' schedules being very busy in the summer, that we might still be able to find some time, a few days here, a few days there, to do that kind of thing, putting us then in a position to start intensive hearings in September.

Mr. Callahan: Were we not talking this morning about trying to do the briefings portion in June?

Mr. Chairman: Yes, I thought we could get them out of the way by the end of June. Perhaps, after all of that, if there is some travelling we think we could usefully do that would increase our understanding, we will do that during the summer and look towards the intensive hearings in September early October, leading us to writing a report for the late fall. I do not know if the chairman is being unrealistic. I am assuming we get all the time we need to do this, but I do not know if I am being unrealistic. I wonder if

members have some views as to whether that type of timing would meet their needs.

Mr. McGuigan: I have some reservations about whether we will be able to touch very much on the things on the last page. Each one of those is probably a committee in itself.

Mr. Chairman: I think we are talking about the DSPS right now, Mr. McGuigan. The miscellaneous issues are something we would do after. I am just on the first half here.

Mr. McGuigan: That is the point I wanted to make.

Mr. Chairman: In that time frame I am discussing we were not really thinking about any of these other extra issues. I was hoping for some feeling about whether members feel that would meet their needs and if they could be available during the summer and that sort of thing.

Mr. Cureatz: And to have completed the DSPS study?

Mr. Chairman: To have an interim report available for the late fall, November to December.

Mrs. Grier: We are looking, then, essentially at briefings being completed by the end of June.

Mr. Chairman: Yes.

Mrs. Grier: Then during the summer we might take the opportunity to look at some other facilities.

Mr. Chairman: Yes.

Mrs. Grier: Then items 3, 4 and 5 on this would be in September.

Mr. Chairman: Yes, and items 6 and 7 in October.

Mrs. Grier: I think that is realistic. I think we are going to find ourselves drafting for two weeks.

Mr. Chairman: The two weeks could be interspersed, a few days here, a few days there. I do not think the drafting would be full-week hearings. It will be a day here and a day there. That could even take place during the fall session.

Mr. Cureatz: That never works.

Mr. Chairman: No?

Mr. Cureatz: I never find the cohesiveness. We are all tearing around, getting ready for question period or something. Some people do not have that.

Mr. Chairman: Some of us may be, others may not. Maybe we could try to—

Mr. Cureatz: If I had my druthers, I would rather sit for three or four days or two days, whatever it is, and just do it as opposed to—

Mrs. Grier: We have no idea if the House will ever be called back again. We may have time—

Mr. Cureatz: Yes, exactly. We might just have another election.

Mr. Chairman: In that case, we will have to rethink what we are doing.

Mr. McGuigan: Certainly back-to-back meetings are much to be preferred because you do not have a memory loss between meetings and so on.

Mr. Chairman: Just to comment on meetings, I hope to make as much use as we can of briefings from the legislative research back-grounders on reports. I am hoping to ask people who are testifying before us to give us their commentary in advance, allowing us a chance to review it and perhaps asking them not so much to present their briefing in chief as to allow us to examine them on it and attempt to have as efficient a set of hearings as we can.

Mr. Richmond: I mention that in my memo.

Mr. Chairman: Yes. Actually, I think there are some comments at the end on that.

Mrs. Grier: Under "Committee Procedural Operations."

Mr. Chairman: By doing that, my experience has been that this can be quite effective. We would like to make that sort of a guideline for the committee to follow, if we can.

Mrs. Sullivan: I would like the advice of other members of the committee as to whether there will be time in September to cover items 3, 4 and 5, which are fairly much the heart of the work—

Mr. Chairman: Yes. It might go into October, but what would it usually be? Perhaps those who have had more extensive experience on hearings might comment.

Mrs. Grier: I think we are flexible. We may well find ourselves here the last week in August. We are not tying it to September. It is when we can get time.

Mr. Charlton: I have just a couple of comments on that. If we were proceeding in the same fashion as we proceeded two years ago, I would say the answer to your question was that you are right. There is not enough time in September to do it. What we have tried to do here in splitting it up was to avoid two things that we ran into last time.

One thing was having Hydro come in on day one of its presentation and dump all the material on us and start wading us through it. It took us much longer to get through that material than if

we had got it all in advance, which is what we are targeting for this time.

The other thing we found in the last set of hearings that extended the time a lot was, as you went through the Hydro presentations you inevitably either found things that were missing or found references to things that were not there. You requested it from Hydro and it delayed the whole process.

What we are proposing to do is to have that briefing session in June so that we can come out of that session with the assistance of research in determining what it is we still need from Hydro, what it did not bring us, what it has referred to that we need to see, those kinds of things. Then before we get back here in September, hopefully, not only will we have been well prepared for the hearings we are going into, but also we will already have any additional information from Hydro that seemed to be lacking in its initial presentations. I think it is realistic in that sense.

Mr. McGuigan: It puts a real burden on members, though. We have to do our homework. If we come in with Hydro people here and we have not read the material, they will soon find out.

Mr. Charlton: That is true.

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Mr. Chairman: I hope members will take that to heart. We would like to make our hearings meaningful. If we can perhaps make use of Mr. Richmond and his services to give us some background briefings on that, we can then focus and bring people pretty well up to speed.

Mr. Richmond: Or outside experts.

Mr. Chairman: Or outside experts; that is true. Mr. Richmond has indicated we may feel a need—

Mrs. Grier: I know you read all of this stuff and it is copious. I am sorry; I guess I do not absorb it all first time around. It is very helpful perhaps to have a quick, verbal briefing from our own staff, before we get into the presentation, on their understanding of it. I know I found last time that frequently our staff would give us a briefing note as we came in to meet with the witness, which we did not use effectively because we were not quite sure of the thinking that went into the briefing paper from the researcher. If at the beginning of each day we began with some kind of verbal resumé by research bringing us up to speed, I think it would help us to be more effective when we are meeting with the experts.

Mr. South: I guess I am a little confused then. Is this committee really only going to consider DSPS?

Mr. Chairman: No. What I hoped we could do was to set out a plan to deal with DSPS, so that once we have got through that we could get on to the other matters we would like to deal with.

Mr. South: When would we get on to the other matters then?

Mr. Chairman: If we can get through the DSPS by November, I guess we would turn to it after that and we would have the period—

Mr. South: Our mandate goes till when?

Mr. Chairman: It is February 1989, but we could request an extension if we feel there are things we have not had a chance to look at that we would like to look at. It seems that the primary thing before us is this DSPS. I think it is the feeling of the committee that we should deal with it.

Mr. South: It is my whole impression about Ontario Hydro that it calls the shots. It calls the tune and everybody else in the province kind of falls in line and plays the game the way it wants us to play it. All of a sudden, I am starting to feel orchestrated already.

Mrs. Grier: You ain't seen nothing yet.

Mr. South: We are only discussing what we are going to discuss, but I see that big shadow up there, Ontario Hydro, telling us what the hell to discuss. I am worried.

Mr. Chairman: I was hoping that if any orchestration was going on right now it was by this committee itself.

Mr. McGuigan: You have to admit that in the past it has worked pretty well. It was just a question of using hydraulic power. The hydraulic power was there, so we just kept building plants. It worked pretty darned well in the past. When we start to get into environmental matters, then it is really a philosophical question whether we conserve or whether we use these things. That is where we find ourselves today.

Personally, I always did believe Hydro was under the control of the government in spite of what Bill Davis would try to tell us, which was: if there was anything wrong with it, it was at arm's length; but if there was anything good with it, he was responsible. Personally, I think the government has always been in charge of Hydro. I do not know what goes on in the Premier's office, but my guess is that he knows pretty well what is going on.

Mr. Chairman: Just to finish off on the timing, if that sort of time frame meets with some general approval, I think the subcommittee can

take it away and try to flesh it out and see if we can make it work.

That leaves us with these miscellaneous issues and the question of whether there are any other issues members would like to see this committee look at, and then the question of prioritizing the issues we have before us. Are there any other issues members would like to see us look into? Let me review the ones that are here. This is in no particular order. The first is the question of safety and security of power supply. That is really the question of the Hare report on nuclear safety; or at least it is one of those issues, looking into that and perhaps having him give some testimony to this committee.

Mr. South: Do you understand the terms of reference for Hare? Does that include nuclear waste disposal as well as the operation of a nuclear plant?

Mrs. Grier: The operation.

Mr. Charlton: The original intention of the select committee was that it should cover the whole cycle, but that is not the way the government interpreted it. It does not include nuclear waste disposal. As a matter of fact, they have restricted their approach just to the operation of a nuclear plant and nothing else.

Mr. McGuigan: That was brought on by Chernobyl.

Mr. Charlton: Yes, although there was a movement in the committee to proceed in this fashion even before Chernobyl. Chernobyl was just what helped us win the motion.

Mr. Chairman: I have here a press release on the Hare report:

"The government announced the appointment of Dr. Kenneth Hare, professor emeritus, University of Toronto, as a commissioner to review nuclear plant safety. The commissioner will examine the design, operating procedures and emergency plans associated with Ontario Hydro's Candu nuclear plants. The report will be forthcoming December 31, 1987."

Mr. Charlton: In reference to the comment I made, juxtapose that against the recommendation the committee made, which was slightly different. Recommendation 3 said:

"The Ministry of Energy should appoint an independent panel of internationally recognized experts to review, on a priority basis, the safety of the design, operating procedures and emergency plans associated with Ontario Hydro's Candu nuclear generating plants."

If you look at that wording, that essentially deals with much more than just the operation of a

plant, which is what the present study is looking at.

Mr. Chairman: It seems almost the same to me.

Mr. Charlton: Not the way the wording was written in the report.

Mr. Chairman: It might be of interest to the committee to know that the federal committee on the environment and forests has produced a report on nuclear waste. Maybe this committee would like to have a look at that in conjunction with this.

Mr. Cureatz: The interesting thing is that there are two or three communities in Ontario, and one in Manitoba, that have indicated they would readily accept low-level nuclear waste. I do not think they put their minds to high-level nuclear waste.

Mr. Chairman: Who did not put their minds to it?

Mr. Cureatz: Those communities, Elliot Lake being one. If we are talking about the possibilities of examining miscellaneous items, there could be some consideration to this report.

Mr. Chairman: I was just referring to this. The federal standing committee on environment and forestry in January 1988 has produced a report on high-level radioactive waste in Canada entitled *The Eleventh Hour*. I see we are getting very colourful and dramatic with our reports now.

Dealing with what Mr. South was saying, this could perhaps be folded into that subject.

Mr. Cureatz: Along with those communities that have indicated that they would accept low-level nuclear waste, of which there is a substantial amount from nuclear stations. I do not know about high-level.

Mr. Chairman: The second miscellaneous issue here is input into the Hydro chairman's appointment; appointment of a new Ontario Hydro chairman and the possible role of the select committee on energy in reviewing the candidate.

The third item here is decision-making and accountability of Hydro—that is a big subject—decision-making processes and accountability, looking at various other jurisdictions and how it is handled there.

The fourth item is financing of Hydro, the fact that it is tax-free and a number of other items.

The fifth area has to do with public power monopoly. I guess that is the question of whether one wants to continue the monopoly or allow private enterprise into it or whatever.

These were items that had come out of yesterday's discussions. Are there any more?

Mr. South: One old chestnut that is frequently thrown out when you start to crowd Ontario Hydro is that Ontario Hydro is owned by—there were a couple hundred municipalities that originally, as I understand it, backed the note for the development of the big Ontario Hydro developments such as Niagara Falls. A lot of the utility managers will frequently remind you that it is these utilities out here which backed Ontario Hydro initially that own Ontario Hydro, and not the people of Ontario.

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Some people have said it is just a kind of a paper exercise in carrying this thing through. I wonder if we could get some clarification of that? I do not know whether you need an accountant's opinion or something like that. It is an argument they frequently use, saying: "Hands off, you guys, the government of Ontario. You really don't own Ontario Hydro."

Mr. Chairman: Are you suggesting the committee commission a report or hold hearings?

Mr. South: I would like that point clarified, because it comes into the financing. Who owns Ontario Hydro? It is very basic.

Mr. McGuigan: By remaining silent on this question of input into Hydro chair appointments, I would not want to convey the thought that the government would go along with that.

Mrs. Grier: It was their idea.

Mr. McGuigan: In any case, I would certainly want to review that before I indicated that we wanted to do that.

Mr. M. C. Ray: I am still confused on the question of the disposal of nuclear waste and the mandate of this committee, particularly in light of the statements in these summaries we have received to date. I admit I am an amateur and know nothing about the directions this committee has taken in the past, but I would like to know for my own satisfaction what the mandate of this committee is in relation to the disposal of nuclear waste, as it relates to the strategy of providing or meeting the demand with the least-cost options and also with the least impact upon the environment. I would like to know what the mandate of this committee has been in that regard.

Mr. Chairman: I think the mandate of this committee is to inquire into the affairs of Ontario Hydro. I suppose, as the operations of Ontario Hydro would impact on that question, we would

be able to inquire into how Ontario Hydro does it and make suggestions.

Mr. Charlton: I think both the topics you have raised are technically within the terms of reference of this committee as referred to us by the Legislature. On the other hand, some of the specific questions become a part of specifically looking at the operation of Hydro, which is what we are doing with the demand-supply planning strategy, what we did two years ago and what we will continue to do on a number of ranges.

For example, you mentioned the least-cost option. That will become a very clear part of what we are looking at in the DSPS. There is no question about that.

Mr. M. C. Ray: Looking at the cost of the disposal of nuclear waste?

Mr. Charlton: Again, the committee has looked at that in the past and will continue to look at that. For example, the previous committee's conclusion was that although Hydro was in its rate structure theoretically collecting funds for the future disposal of nuclear waste, there was a very clear consensus that that cost was being substantially underestimated. So it has already been part of the process and will continue to be in terms of how we view Hydro and the things we go after around these questions.

Mr. M. C. Ray: That is what I want to be assured of, that we are going to look at that.

Mr. Charlton: I can assure you that we will be raising it.

Mr. Cureatz: I have no problem with that. I think it is an important aspect of the committee.

Mr. Charlton: When you see the summaries of some of the presentations that we are asking research to provide from the last select committee so that we do not have to go through all that from square one again, you will find some significant reference to those matters and understand where the committee got to. Perhaps we can, as Mrs. Grier suggested yesterday, more beneficially take that the next step rather than going back over it all again.

Mr. M. C. Ray: That is what I hope we will be provided with: namely, whatever data have already been generated; and in addition, irrespective of cost, the environmental impact.

Mr. Charlton: For example, I made reference earlier to this committee doing some follow-up on the recommendations of the last select committee which have not yet been dealt with, either by the government or by Hydro. Several of those recommendations dealt with both the

question of nuclear waste disposal and the buyback rate and the least-cost option.

Mr. McGuigan: It seems to me we would be dealing with work that is already done. We cannot, as a committee, reinvestigate something that has been investigated many times.

Mr. Chairman: I was going to indicate to Mr. Ray that there was a 1980 select committee to specifically look into nuclear waste, so there was that type of report done. On the other hand, as we are evaluating some of the options, such as the nuclear option, undoubtedly the question of nuclear waste forms part of that, so it will enter into that.

Mr. Charlton: There inevitably will be a couple of other issues associated with the nuclear waste question that obviously will become priorities that were not necessarily priorities in the committee two years ago; for example, the question of the export of tritium after the tritium recovery plant goes into operation at Darlington this spring. There will be a number of issues like that which have not been dealt with in the past that will come to the fore.

Mr. M. C. Ray: Could I raise another issue? Given the degree of cynicism expressed here already about Hydro, its management and its relationship with the government, I have trouble categorizing those aspects set out on page 3, under the titles "Decision-Making and Accountability of Hydro" and "Financing of Ontario Hydro," as "Other Miscellaneous." It seems to be an issue of paramount importance to a number of people, expressed here already in cynical terms, and I myself feel it is of paramount concern. I just wonder if we will ever get around to it as long as it is under that rubric of "Other Miscellaneous" issues.

Mr. Chairman: I do not think you should read too much into that comment "Other Miscellaneous." "Second phase" might be a better heading there. Maybe we have shifted into a discussion of priorities, but if you are indicating you feel that is the first issue the committee would like to deal with, I am sure the committee could do that.

Mr. Charlton: Just on that point and the question of whether a select committee on energy will ever get around to the issue of Hydro's accountability, it is not a question of this committee or any predecessor committee getting around to that question; we have all dealt with it, it is a question of winning the issue.

For example, the committee from two years ago and the committees from 1976 until 1981 all dealt in very specific and horrendous detail with

the question of Hydro's accountability. If you look again through the recommendations of the select committee from two years ago, at least a third of the recommendations which the committee made deal with questions of Hydro's accountability and how to make it more accountable. Again, that is why I suggested earlier that instead of redoing what we have already done, this committee needs to take some really firm positions reaffirming some of the recommendations that have already been made around questions like Hydro's accountability. There has already been extensive work done on that and it is a matter of winning the battle, not redoing the whole war.

Mr. Chairman: I understand.

Mr. South: That is a good point that Mr. Charlton makes. Here we come out with these many reports and nothing gets done about it. I wonder if what we need as part of this whole exercise is somebody who will come in here and tell us, as politicians in a democratic process, how we get from committee recommendations to the assurance of their becoming government policy.

I do not think it is that magical and I think it can be done. I imagine consultants specialize in things like this. They specialize in anything else.

Mrs. Grier: I thought you did that in caucus on a regular basis.

Mr. South: Oh come on, let us be honest and let us be pragmatic about it. We are all beefing and talking about how ineffective committee reports are. Maybe that is one thing we should do. We would do this Legislature a great service if we could find a magical way of making committee reports really become part of government policy.

Mrs. Grier: That is the \$64,000 question.

Mr. Charlton: Get your House leader to bring it up in the House for debate so we can vote on it.

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Mr. Chairman: I understand there will be a new Power Corporation Act coming forward, which may lead us into some of this in a more orderly fashion once a bill is before the House.

Mrs. Grier: I think we are into the priorities of these other issues, and I just wanted to agree with Mr. Ray that I think the decision-making and accountability of Hydro ought to be the next one we look at after DSPS. I do not know how you can separate that totally from the financing, but maybe the two need to be bracketed together.

I think we have to deal with DSPS, and then after that we get back to reviewing the other

recommendations on accountability and seeing, perhaps with Mr. South, if we can get to the decision-making process on them.

Mr. McGuigan: I would like to remind members that we are dealing with meeting hydro demands in the next few years and decisions have to be made within one or two or three years to put these processes to work so that the power is available when it is needed. I do not see anything wrong with these latter items as a further study, but right before us is the job of trying to give some advice and some principles to Hydro as to how it begins to meet the power demands in the next two or three years.

Mrs. Sullivan: If we are prioritizing the miscellaneous issues, I think there is a commitment from government relating to this committee reviewing and having input into the appointment of the chairman. When that time comes, I think it should be dealt with at the appropriate time, no matter what is happening in between.

If the Hare report is going to be coming out in the spring, perhaps that is something we might want to look at as soon as it is out. I understand now that, while it was due in December, it is expected in April or May. At that point we might want to have a look at that once again, as soon as it is available.

Mr. Chairman: Would you want to interrupt hearings to do that, or fold that into the hearings, or would you touch on it when we talk about options, when we start dealing with the nuclear option? It might fit in there.

Mrs. Sullivan: It fits in, I suppose, but I think it is going to have to be dealt with independently from the other discussions.

Mr. Chairman: As an independent subject?

Mrs. Sullivan: I think so.

Mr. Chairman: Subject to a report on its own, maybe?

Mr. Charlton: I think it is hard to make a decision on that until we see the Hare report. I agree with you that it is an important topic that should be dealt with fairly quickly once the report is down. On the other hand, I can think of a whole range of possibilities there.

They may come down with a report that is very useful and beneficial, that is complete and that this committee could deal with in days and recommend that the government implement it. On the other hand, we may end up with a report that, as you are suggesting, we may want to spend some time picking apart. I think we will have to wait until we in fact see the study before we can make those kinds of decisions.

Mrs. Grier: On the question of the Hydro chair appointment, when the Premier (Mr. Peterson) made his announcement in December, what he said was that the permanent successor to the present chairman would face public confirmation hearings before a legislative committee.

I have trouble deciding what comes first, the changes in decision-making and accountability or appointment of the chairman who is going to live with that new—hopefully—accountability; but I think it perhaps might be helpful to us if we could get from the Premier, again, some idea of the time frame.

If he anticipates being in a position to nominate a chairman in the very near future, we may well want to build into our timetable, or he may want us to build into our timetable, those confirmation hearings in advance of our readiness to deal with it. I think it would be helpful if we knew that, and then if we knew that, that might help us decide when we want to give a more serious look to the decision-making and accountability.

But my priority on these five items would be the decision-making and accountability and financing, as one; and input into chairman's appointment as two; with public power monopoly and Hare, I guess, having a lower priority to be determined on the timing of the Hare report.

Mrs. Sullivan: I suppose that what I was trying to say was I think the appointment of the chairman of Hydro is an integral part of the accountability; no matter what we are talking about at the time, it fits into that section and should be dealt with by the committee when the government is prepared to put forward a nomination.

Mr. Chairman: I suppose to that extent our timetable may be mandated for us if there is a decision to appoint a chairman. Presumably that is not going to be put before us before we get through the demand-supply planning strategy.

Mrs. Sullivan: No, and I suspect it will not be put forward until the review of the Power Corporation Act is complete.

Mr. Chairman: So we may not be looking at that until next spring.

Mr. McGuigan: I am just wondering if a decision has been made by the the Premier whether it would be, in fact, this committee that would do the interviewing on the chairman. I suppose it is only natural to think of but I do not think we should—

Mr. Chairman: Presume?

Mr. McGuigan: —automatically presume that is the case.

Mr. Chairman: I think we are at the mercy of the Premier's office on that subject and we will just have to wait to see what it wants to do.

To return to these other issues, I do not hear the members coming forward with any other than these five which were spoken of yesterday. Are there any others? This, of course, is not carved in stone at this moment.

Mrs. Grier: They can all be made broad depending on any other suggestions.

Mr. Chairman: That is right. I am sure as we go forward it may be that others will occur to us.

Mr. Richmond: I will adjust this version to reflect this afternoon's discussion, adding a phrase here or there.

Mr. Chairman: OK.

Mr. Richmond: Just so we have it on record; so if and when we get to this in eight months' time we will have some record.

Mr. Chairman: I think also the steering committee is going to take away what we have and it may be that it will come back with a report to the next sitting of this committee on that.

Mr. Charlton: You asked about other topics. At the end of the last select committee's report it dealt with two topics that it felt the select committee should review in the future. There is one of those two which I think is extremely critical at some point, although it is not as immediate or as urgent as some of the others on the miscellaneous list. That is item two in recommendation 26. It is clear from the DSPS report and from changes in Hydro's stature over the last several years that demand-side options are going to become more and more important, regardless of the precise direction we end up with.

In that context, the role of municipal utilities in facilitating demand-side options is going to become extremely important, because at present Ontario Hydro has very limited authority over the way in which the utilities operate. At some point we are going to have to do a serious review of the legislation which empowers the local utilities and seriously consider some changes there to facilitate the demand-side things that Hydro is obviously going to be getting into.

Mr. Chairman: Would you see that as a separate subject?

Mr. Charlton: It is definitely a separate subject.

Mr. Chairman: Not forming part of our discussions of any recommendations on demand-side options?

Mr. Charlton: I think what it should be is one of those recommendations that refers to future work, depending on what gets accepted in our report.

Mr. McGuigan: Given the importance of Ontario Hydro in the life of this province, I do not think it is hard to see that perhaps there should be an ongoing committee on Hydro. We dropped it for four years, from 1981 to 1985. There was nothing done during that period. I think we would be in a lot better position if some of these questions that we are dealing with right now had been looked at earlier. When we look at the whole list of all of these things, you really cannot see an end to it.

1520

Mr. Charlton: There may never be an end to it.

Mr. McGuigan: I do not see why we could not be thinking in terms of ongoing Hydro committees.

Mr. Charlton: That is why originally when we negotiated the deal with you guys two and a half years ago we asked for a standing committee instead of a select committee.

Mrs. Grier: As part of that, my concern is that the only other issue I see coming is the amendments to the Power Corporation Act, which it has been indicated the House is going to be receiving. That is all going to fit into what we are talking about. I do not know my procedure well enough to know whether that legislation can be referred to a select committee for review, but it would seem unfortunate to have us looking at decision-making and accountability while another committee was in fact examining the clause-by-clause details of the Power Corporation Act. Can legislation be referred to a select committee; and if so ought we not to perhaps add that at least as another issue we anticipate dealing with?

Mr. Chairman: I am not sure that is the normal practice, but I suppose we could look into that.

Mr. Charlton: It is within the jurisdiction of the House.

Mr. Chairman: To do as it wishes.

Mr. Charlton: The House can basically do anything it wants.

Mr. Chairman: It is obviously not the regular routine.

Mrs. Grier: I think I would like to see it at least added to our list of other issues, proposed amendments to the Power Corporation Act, because we know for sure that is something the government has said it is going to do.

Mr. Charlton: I was just throwing hand signals across the committee a few minutes ago. I took a quick count through the recommendations of the last select committee. There were 26 of them, 15 of which dealt with the questions of accountability and the decision-making process in Hydro, all of which are relevant to the Power Corporation Act. Several of them are specific suggested amendments to the Power Corporation Act. In that context, it can be said that the select committee in its last two rounds of work prompted the present review of the Power Corporation Act. Certainly I think we should be involved in that review at some point.

Mr. M. C. Ray: Am I right in assuming then that the matter raised by Mr. Charlton earlier on the role of Hydro in compelling or supervising its relationship with local utilities will be a matter that we are going to delve into through a review of the Power Corporation Act? Is it or is it not something that we are going to include as one of the things to examine?

Mr. Charlton: If I can quickly comment on that, and I am flying by the seat of my pants here because I am going strictly from memory, and it is two and a half years ago, my recollection is that a review of the Power Corporation Act would only deal with the local utilities in a minor fashion. The local utilities are essentially empowered under three pieces of legislation, as I recall, the Municipal Act, the Public Utilities Act and the Power Corporation Act. The only part of it that the Power Corporation Act deals with—and we can certainly get more information through research on this—is the way that Hydro will deal with those utilities. The specific operation of the utilities themselves is not detailed in the Power Corporation Act. That is my recollection of it, but it is some time ago.

Mr. M. C. Ray: Another area of significance and concern to me is the question of conservation. If there is going to be a significant change and that kind of economy, it is going to come through local utilities. I do not know what the mandate of our committee here is now with respect to the operation of local public utilities.

Mr. Chairman: I do not think we have any mandate in that regard. We are restricted to Ontario Hydro affairs.

Mr. M. C. Ray: But if Hydro is the supplier—

Mr. Charlton: To repeat the comments my colleague just made, that is exactly why recommendation 26 was there in the last report. The relationship between Ontario Hydro and those utilities is already in the purview of this committee. The utilities themselves are not. That is specifically why the previous committee requested that jurisdiction. We should go after that yet again, get approval from the House to deal with that additional issue which is not—almost everything else we have discussed here today is part of our purview or part of our terms of reference. The specific operation of the public utilities is not; some aspects of their operations as it relates to Ontario Hydro are. That is specifically why that recommendation was there in the last report.

Your comments on conservation are particularly useful ones. From the studies this committee had done in the last round, studies which we commissioned for ourselves, what became apparent in the conservation sector was that about two thirds of conservation can be provided directly by provincial initiatives, either through Hydro or through government Ministry of Energy programs. But the last third you basically have to pick up in the way utilities operate. We have to get at that question. That is, again, specifically why that recommendation was there.

Mr. M. C. Ray: Speaking only personally, I would be in favour of including that within our mandate and seeking that from the Legislature if need be.

Mr. Chairman: Thank you, Mr. Ray. Are there any further comments, with respect to the second phase shall we say? As I began to say earlier, I do not think this concludes our discussion. We will undoubtedly find other things and we may even feel that the priorities should be different as time goes on. I think what we want to do now is get on with the DSPS and get that out of the way.

Mr. Richmond: May I ask a question?

Mr. Chairman: Yes, Mr. Richmond?

Mr. Richmond: I will expand these so-called other miscellaneous or second-phase issues to reflect a number of the other points that have been raised today. I did not get any sense of a consensus agreement on priorities, unless you want to leave that up for grabs for eight or 10 months' time. The only notion of a sense of priority I got, and there were some differing opinions, was to bump decision-making and

accountability of Hydro and financing to the top of the list.

Mr. Cureatz: I would like that to be at the top, and then safety. I am not that concerned about the appointment of the chairman being number one or two.

Mr. Richmond: Since there does not appear to be a consensus, I will just list them, then, and leave them—

Mrs. Grier: I think it would be nice if we could come up with an agreement that decision-making and accountability was top of the list. I sense that there is no particular disagreement with that.

Mr. Chairman: I will put it to the committee. Does the committee feel that decision-making and accountability should be the first area we turn to after the DSPS? I see a fair number of nods.

Mr. Richmond: OK.

Mr. McGuigan: It may be a little too soon to make those decisions. It will be reviewed when we become better informed later down the road.

Mr. Chairman: Shall we say it is with the understanding that we are not locking ourselves in and that, as the committee goes through its hearings and its deliberations, it may feel, if something else comes up, that it would prefer to look at that. I do not think there is a sense this is locking us in.

Mr. Charlton: Just a quick comment. Looking at that list now, I would concur with what seemed to be the general headshaking, that decision-making and accountability should be at least temporarily at the top of the priority list. I can think of circumstances, although they are very unlikely to occur, where we would very quickly want to change that. For example, if the Hare commission were to come down with a report saying the Candu reactors in Hydro's operation are a disaster waiting to happen, we may want to take on that issue fairly quickly. On the other hand, that is not very likely to happen. I think we are going to see a fairly mild report on the question of nuclear safety, and I think it is not likely going to be a major priority for this committee.

1530

Mr. McGuigan: Setting aside Mr. Charlton's preconception, when you look at those four it seems to me that you have to come down on safety as number one. I assume, as you do, that we are looking at a fairly reasonable bill of health on it.

Supposing safety and security were not number one, supply certainly has to be number one. When a person turns on the switch, he wants the light to go on.

Mr. Cureatz: Do you mean the safety of nuclear plants?

Mr. McGuigan: We are talking largely about nuclear plants.

Mr. Cureatz: We had one committee spend a whole year doing that, and we have never taken a whack—at least I have not in 10 years—at decision-making and accountability. I would like to do that.

I am not downgrading safety, but we have a lot of reports on that; and as Mr. Charlton and Mrs. Grier said, I do not think there is going to be much of a change. Mr. McGuigan, you know that. We are not going to come out with something different. The nuclear plants have not changed much in the last three, four or 10 years.

Mr. McGuigan: We have had a couple of scares, though: Chernobyl and Three Mile Island.

Mrs. Grier: Hydro will maintain it differs totally from anything like that.

Mr. Charlton: You are right about the issue of security of supply, Mr. McGuigan, but the issue of security of supply only becomes an issue if the Hare commission report documents for us major problems with what is going to be the major component of our supply system. The potential is there to make it a top priority, but I think we are going to have to see the report before we can—

Mr. McGuigan: That was my point.

Mr. Chairman: We are not locking ourselves in. I think it was just to try to get a sense of where the committee felt it should go. We can make appropriate plans. Are there any other comments anybody would like to make right now?

I think it would be useful for myself, as chairman, to formally request both Hydro and the Ministry of Energy to provide the committee with a technical representative to be at all hearings, to provide us with any information that we may feel we need from those bodies as the hearings are going on. I do not think that should be too much of a problem for those groups because I think they are planning to have advisers at our meetings anyway.

Mr. Charlton: And to provide us with any interesting documents under the table that they can come up with.

Mr. Chairman: With the committee's concurrence, I will make that formal request. I

believe that covers everything I wanted to do. If there are no other comments, I will adjourn this committee to the call of the chair, and perhaps the

subcommittee members can get together and just finalize a date.

The committee adjourned at 3:33 p.m.

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Vice-Chairman: McGuigan, James F. (Essex-Kent L)
Brown, Michael A. (Algoma-Manitoulin L)
Charlton, Brian A. (Hamilton Mountain NDP)
Cureatz, Sam L. (Durham East PC)
Grier, Ruth A. (Etobicoke-Lakeshore NDP)
Matrundola, Gino (Willowdale L)
Ray, Michael C. (Windsor-Walkerville L)
Runciman, Robert W. (Leeds-Grenville PC)
South, Larry (Frontenac-Addington L)
Sullivan, Barbara (Halton Centre L)
Clerk: Manikel, Tannis
Staff:
Richmond, Jerry M., Research Officer, Legislative Research Service



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Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy
Organization

First Session, 34th Parliament
Wednesday, June 22, 1988

Speaker: Honourable Hugh A. Edighoffer
Clerk of the House: Claude L. DesRosiers

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LEGISLATIVE ASSEMBLY OF ONTARIO

STANDING COMMITTEE ON ENERGY

Wednesday, June 22, 1988

The committee met at 3:39 p.m. in committee room 2.

ORGANIZATION (continued)

Mr. Chairman: I will officially call the meeting to order. I would like to thank you all for coming out today. Thank you for coming out on this hot, sunny afternoon.

I thought, before the House rises—hopefully next week—it might be useful to report on what has happened in the steering committee and also to bring you up to date on the plans and get your input in terms of the hearings.

First, in the packet that has been given to you, there is a copy of the budget that was approved for the committee. It is the long document. It is the copy that each of you indicated your approval of in writing, but in case you do not have it, there is a copy now for you. Our full budget was approved.

The steering committee has met five times over the last few months to discuss the possible agenda for hearings—in fact, there is a very tentative hearings agenda in the package as well—and also to deal with the question of hiring a consultant.

The committee had decided at its last sitting that it would be helpful to have a consultant to give us general advice, and it charged the subcommittee with looking for one and coming up with a recommendation.

We have approached most of the consultants in the field across Ontario and asked them for proposals and we received offers from two. We interviewed Jeff Passmore of Passmore Associates International and Dr. Eric Sievwright of E. C. Sievwright Associates Ltd.

The subcommittee had a time making a choice between these two very competent consultants—we had a very strong battle, as Mr. Charlton is indicating here—but we felt unanimously that we would recommend Jeff Passmore of Passmore Associates to be the general consultant.

You have, in the package of documents before you, a copy of his résumé and his letter that came to the committee. Mr. Passmore has worked with previous committees and has been fairly active in this field. We felt that he would be a good consultant to this committee, would give us a

good background and would help in dealing with the very technical and complicated subjects we may have to look into.

That, I think, completes the report of the subcommittee. I do not know if any other members have anything else they would like to add to that. Would it be possible to get a motion?

Mr. Charlton moves, seconded by Mr. Runciman, that the report of the subcommittee on the agenda and procedure be adopted by the committee and that Jeff Passmore be retained as consultant.

Motion agreed to.

Mr. Chairman: The subcommittee will continue to discuss with Mr. Passmore his retainer and setting down the specific tasks that he will do.

I wonder if I might turn to the tentative hearing schedule that I gave you. As you are aware, the committee has been assigned the weeks of August 1 and 8, together with the weeks of September 12, 19 and 26 and the week of October 3 for its hearings. What has been set out in this proposed schedule is a very tentative—I underline the words “very tentative”—idea of what we might do in those weeks.

The feeling of the subcommittee was that we could use the weeks of August 1 and 8 to be briefed, to be brought up to date and to get background on the demand-supply planning strategy and the various subjects we are going to be looking at from bodies such as Ontario Hydro and the Ministry of Energy.

The Hare nuclear plant safety report is one we might want to look into. The two technical advisory committees the Ministry of Energy has set up should have reported by then and we could possibly hear from them. Perhaps if there is time, we could get any comments that some of the major consumer groups might have, just as a general background and to get the various thoughts that the groups have on the DSPS.

We would leave the weeks in September and October to hold hearings. I think what we have laid out in those weeks is perhaps more tentative than the weeks of August, because we would like to structure those hearings in their final form once we have gone through the briefings.

I guess I do not have much more to add on that subject. Do I have any thoughts from the

committee members on the hearings, as to what we might do in addition or how they might otherwise like to deal with the hearings in August and September?

Mrs. Grier: I just have a little concern about the time frame in which we are going to notify people that we want them to appear. While I recognize that it may not be until after we have heard from some of the people in August that we really know what questions we want answered, I think I remember from the last committee that we put the groups to a considerable amount of effort in preparing briefs and submissions and that they needed as long a warning as possible that we were going to be asking for them. Maybe you have already taken that into consideration.

Mr. Chairman: The committee has advertised; I should have added that in the report. We did advertise for submissions at the middle of the month, I think, and we are proposing to continue to take in submissions.

Mrs. Grier: I see.

Mr. Charlton: I was just going to add that. We have advertised. A number of people have already been in touch with the clerk, and there will likely be more over the coming weeks. They are being advised of the general outline of the schedule as well as being told about deadlines for outlines of submissions and so on.

The three weeks that are indicated here between the briefing sessions and the start of our hearings will not be the first notification. What will happen in that three-week period is that perhaps they will be delegated a particular time slot in that period.

Mrs. Grier: What is the deadline for submissions?

Mr. Chairman: It is the end of June.

Mrs. Grier: So probably we would sort of go through those submissions and see whom we wanted to have appear before us.

Mr. Chairman: In fact, in your package is one submission we have already received from a rural district residential consumer in Kingston township.

Mr. Charlton: It is not likely that all the submissions will be in by the end of June. What we will have from some is an indication and perhaps an outline. We have told them all we want their submissions in advance of the start of the committee.

Mrs. Grier: That sounds like a very good way to proceed.

Mr. Chairman: We are letting people know, but I think in terms of actually scheduling people, as you said yourself, Mrs. Grier, we will know the questions we would like to ask probably better after we have had the briefings in August.

Are there any more comments or thoughts on the hearings?

There are some technical groups that have indicated they would like to talk. We may have to be a little flexible to meet their needs, and it could be that we might even take some hearings in August if people can present to the committee only at that time.

Mrs. Grier: I have one more question. Have we asked Ontario Hydro to give us copies of their submissions in advance?

Mr. Chairman: I am actually going to be sitting down with Hydro tomorrow to talk about the briefings and, in fact, ask them to do that very thing so we can have a chance to look at them before they present them.

Mrs. Grier: I think that would be very helpful, because if we did spend July reading Hydro submissions—that is just what I had planned to do—we could use their time before the committee to question them rather than have them make an overly detailed presentation. I mean, they will have some slides we will have to see, but we will not have to read them all.

Mr. Chairman: On the proposed hearing schedules, I would point out that we had reserved the last week of hearings for questioning Hydro. In our thinking I believe we felt that after we had gone through all the submissions and had heard all the presentations, we would probably have a number of things we would like to question Hydro on, so we have put questioning of Hydro at the end.

During our briefings, once again we hope Hydro will help. Some of the members may not be aware of the Public Utilities Act, and there are some things that might be very basic but very necessary backgrounders. I do not know if we had in mind a real questioning of Hydro in August. We were thinking of leaving it till the end of the hearings. It might be more appropriate—we would have everything at that point—rather than questioning them once and then questioning them again.

Mr. Charlton: I think, though, that what Mrs. Grier was suggesting was that under the item here where you have "General briefing by Ontario Hydro," if we have the bulk of their briefing material in advance so that we have been through it, perhaps we will not have to have Hydro go

through it all again here in its presentation and we can ask questions around the briefing material so that we get to the clarification stage and have a briefing process that is useful.

Mr. Chairman: The point is well taken. As I say, I will be discussing it with Hydro tomorrow and reporting to the subcommittee on that sort of thing. Did you have something, Mr. Richmond?

Mr. Richmond: There is only one point. Staff-Lewis Yaeger and I—attended a technical briefing over at Hydro on the DSPS, and I know from reading most of the report that even though you think you know it, when you hear from them there are some different points of emphasis. Of course, I am sure we all understand that since DSPS came out last fall there have been intervening developments that have changed even some of their assumptions and thoughts, so I feel their presentation will be of great value.

Mrs. Grier: I am sure it will.

1550

Mr. Chairman: Are there any more thoughts on the hearing schedule that is before you, things we might have missed? I propose to use Mr. Passmore's experience as well to go over this and to get the benefit of his thinking before we finalize it; but given that perhaps most of you will be on vacation, or at least the House will have risen by the time we get to talking in detail, I thought it might be best to do it now.

Mr. Runciman: You sound like a member of the public. You are probably going to be on vacation too.

Mr. Chairman: I was hoping to get a couple of days off in July myself. It was bit of a Freudian slip.

Another subject I wanted to bring up was tours. We had discussed at our last meeting the fact that some members like to have tours of some Hydro facilities just to get a feel for what they are like. Two or three weeks ago, we proposed a series of tours. I guess I should apologize for that; we did it a bit at the last minute, and people could not make time on their schedules, so it did not really work out.

I am wondering if the members of the committee might be interested in having some tours; and if so, when? Should we make it part of the two weeks in August? Should we take a day and look at some of the facilities around Toronto? Or just how would the committee like to do that?

Mr. Cureatz: I do not think it would be worth while to set aside a whole week. Visiting Darlington would not be a bad idea, or we could go up to Bruce; but since Darlington is close to

being on stream, as a matter of fact, we would catch both aspects: half of it under construction and the other half ready to come on.

Mr. Chairman: I think the tours we proposed took in Darlington, Lakeview—correct me if I am wrong, Tannis—and the Rexdale switching station; it was just what is right around Metro. It could be done in a day.

Mr. Cureatz: You would need more than a day to do those three.

Mr. Chairman: All right; two days. Depending on how extensive the briefings are, we might be able to find committee time; or would the members prefer that these tours be set up and the members could take them at a time when the committee is not sitting but at their convenience? I do not know how the committee would like to deal with that. I am conscious of the fact that we only have six weeks of sittings in total.

Mrs. Grier: Were we not going to sit during the last week in July at one point?

Mr. Chairman: That is right, but we have been given the first week of October in replacement of the last week of July.

Mrs. Grier: I see.

Mr. Runciman: How beneficial is it to take these tours? Are they beneficial?

Mr. Cureatz: I do not think it is worth while spending a week on them, but it would not hurt just to have a little quick synopsis here in Toronto.

Mr. Charlton: The tours are very beneficial in terms of giving yourself a perspective on what it is you will be listening to in here.

Mrs. Grier: Having gone on the tour before Hydro came the last time, I wonder whether it would not be beneficial to have the tours between August and September, then to have Hydro in and hear about it. Darlington, Lakeview and the switching station would be very interesting, but we would probably find it more intelligible if we did it after the first two weeks in August.

Mr. Chairman: Given that people will have to travel in, it might be useful to do that, say, in the last two days of those sittings. Would that be workable?

Mr. Cureatz: I do not think you should leave it up to individual committee members, because we will not do it; there will be other priorities. We should set aside time.

Mr. Chairman: The concern I had, though, was that some members have seen these and some members have not; not all members may feel it useful to do that. But I guess I am getting a

sense that it would be useful to set it up as part of the briefing; so why do we not do that? If the briefings are going to take more than the two weeks, then we will have to make another decision, but it may fit in nicely.

Mr. Fleet: Could I make one suggestion? If it is possible to arrange the tours in a fashion that does not conflict or upset the things which this committee has to do, I would urge the committee and Hydro to consider having the tours available for all members of the Legislature.

There is obviously a large number of members who are newly elected; if they were given sufficient notice, while I do not think you would get mass numbers, at least you would get some who might be available. I know that if my schedule permitted I would be interested in going.

You will certainly get some people who will be substituting on this committee, but even for those people who never sit on it I suspect some would be interested in doing that, given the economic and social impact of everything Hydro does. I would think you could add people without too much trouble.

Mr. Charlton: It might even give them some insight when they read our report.

Mr. Chairman: All right; we can consider that. I note that it will be in August and most members will be on other committees or occupied in their constituencies, but there may be some who will come.

Mr. Brown: I have had conveyed to me by the town of Elliot Lake that they might wish us to come up and view the start of the energy cycle, at least for Ontario's only indigenous fuel, that being uranium. I wonder if the committee might entertain the notion of going to Elliot Lake and having a look at the mines in Elliot Lake and whatever else might be of interest there.

Mr. Chairman: Would they be interested in presenting to the committee? I think in our fall hearings we have left open the possibility, and certainly have moneys in our budget, to travel about the province, depending on whether there were enough people interested in a certain centre.

Mr. Charlton: Mrs. Grier just raised a concern with me, and it is a good point. I think not only the town but probably several of the unions and companies locally would be interested in presenting to this committee. They made a request to make presentations to us two years ago and were basically turned down because we took the position at the time that we were not looking at anything that fitted or related to their

concerns. Certainly the project we are involved in now does.

I think it would be very appropriate to make some contact there and to consider going to Elliot Lake and hearing presentations there.

Mr. Chairman: You would think it appropriate as part of our fall hearings and not the briefing?

Mr. Charlton: Yes.

Mr. Chairman: I do not think it was the feeling. I think we are going to have enough to swallow in two weeks. We will not really be able to—

Mr. Charlton: Not as part of the briefing, but as part of the actual hearings.

Mr. Chairman: There are some facilities and other interesting independent and alternative energy projects in the north we might look at.

Mr. Charlton: Yes. I was not suggesting that in terms of viewing. I was suggesting it in terms of them being prepared to make major presentations.

Mr. Chairman: Hearing presentations and so on?

Mr. Charlton: They did submit some documents, which Mr. Richmond probably has.

Interjections.

Mrs. Grier: I think it is important that we go. They certainly wanted to come the last time and felt badly that they had not been adequately heard. If we are going to travel, I think it is important that we make sure Elliot Lake is one of the places we go to in the fall session.

Mr. Chairman: Mr. Richmond, did you want to comment?

Mr. Richmond: Last time too, Mrs. Grier and Brian, you will remember the other nuclear communities, Chalk River and Deep River in the Ottawa Valley, appeared. I believe the mayor of one of those towns came to the committee. I am just suggesting, if you go to the mining communities, it might also be worth while to go to the nuclear research communities.

Mr. Charlton: There is some potential there, but if you think back—

Mr. Richmond: I am just offering that remark as a suggestion.

Mr. Charlton: We could certainly make inquiries, but my recollection of the concerns in Chalk River and so on is that if you recall the presentations they made to the committee, although they came to the committee on the basis that we were doing hearings on Hydro, the

preponderance of their presentations had to do with the jeopardy in which the nuclear research programs had been placed as a result of federal government actions and funding reductions. It was not as closely associated with the operations of Ontario Hydro as are the operations in Elliot Lake.

I have no objection to making contact with any of those organizations in Chalk River and so on that came before the committee last time to see if there is any interest. But, having said that, if you look at the briefs they actually presented to us the last time, I think they were far more related to their concern around the jeopardy of their research and the cuts in federal government funding through Atomic Energy of Canada Ltd. I have no objection to contacting them to see what kind of interest there is.

Mr. Brown: I would like to support Mr. Charlton's view that a number of groups in Elliot Lake have said they want to come before this committee. It is more than the council that has expressed that view; both labour and the companies have expressed it too, and I am sure some other organizations may wish to.

I would also point out that Ontario Hydro has a real vested interest in Elliot Lake in that it does own one mine there and purchases much of its fuel from Elliot Lake on long-term contracts. I think there is good reason to go there.

1600

Mr. South: We are giving a lot of attention to vested interests in nuclear generation, and I am wondering if there is any balance given to whoever is responsible for investigating publicly acceptable ways of disposing of nuclear waste. That is the key to the whole thing, not just to go and hear the people about it, such as the unions and Ontario Hydro, who seem to have a vested interest in promoting it. We have to give it some balance and find out where we stand in finding a publicly acceptable method of disposing of nuclear waste. That is the key to the whole question of whether we are going to go any farther with nuclear energy.

Mr. Brown: I am sure in Elliot Lake you would hear some interesting views on waste disposal also expressed.

Mr. Chairman: I think we intend to talk to all, and there are groups that have that as a concern. I note that the federal environment committee does have a report out and we may look into that as well.

Mr. South: There was a 10-year study started and a fair bit of money put aside by the federal

government to research and find a publicly acceptable method. Where does that stand now? Who would we talk to to find out?

Mr. Chairman: I am not sure. Mr. Richmond, do you know?

Mr. Richmond: We could call people from the Department of Energy, Mines and Resources and Atomic Energy of Canada Ltd. to appear before us in the fall. I am sure they could update us on the status.

Mr. South: I think that is very important.

Mr. Cureatz: In conjunction with that: We have spoken about Elliot Lake and Deep River, we should mention Port Hope in passing. I know it is out of my riding, but if we are talking about the nuclear fuel cycle—not that we necessarily have to go there—that is where the product is refined when shipped from Elliot Lake. I think a courteous letter or something like that might be in order. Mr. Charlton, what did you have in mind for Deep River?

Mr. Charlton: I think what we should be doing with all the places that have been mentioned this afternoon is having a letter go out from the chairman, essentially setting out what the committee is looking at in general, giving them an idea of our timetable and the kinds of things we will be looking at and offering to hear representations if there is interest or concern.

Mr. Cureatz: Along with the waste disposal, they have made some progress in finally shutting down the nuclear dump that was in my riding and recycling the product back up to Elliot Lake. It would be worth while to have correspondence at least.

Mr. Chairman: I fully intend to beat the bushes for all representation and make sure we let every group know what we are doing and that they at least have a chance to come. If there are some that we feel we really want to hear from, then perhaps we could cajole them to come, just to make sure we can list the whole range of activity.

I think that more or less touches everything I wanted to deal with today. In the materials we also have a copy of the Cresap review, which Mr. Runciman has been talking about lately, just for interest.

Mr. South: It is here, is it?

Mr. Chairman: Yes. There is a copy in the package you have.

Did you have something to add, Ms. Manikel?

Clerk of the Committee: The only other thing I wanted to ask about was I do not think that we

will have too much trouble in the first two weeks of August in sitting time, sitting Tuesday, Wednesday and Thursday, but do the members want to sit Monday afternoons or just the three days? That will really affect the schedule. In the September hearings we may have to look at more than three days a week, especially if we travel. It is pretty important that I know for the setting up of the agenda what times members are willing to be at the committee.

Mr. Cureatz: Could we leave that open in the second week to maybe squeeze in another day or two? I am just throwing some ideas around.

Clerk of the Committee: We can sit Monday afternoon, Tuesday, Wednesday and Thursday.

Mr. Cureatz: We are sitting two weeks in August, are we not?

Clerk of the Committee: If I am setting up the tours with Ontario Hydro, we have said the last two days of the briefing period, and Hydro will have to book us in, especially in some of its facilities where it has other tours going in. Last time, unfortunately, we had to bump people out and then we cancelled, and I felt that was really too bad. I would like to set something firm and not change that.

Is the committee agreed to putting that on the last Thursday we would sit in August, August 11; so we could set those tours for August 10 and 11? We may be able to fit some meeting time around that, but I do not know.

Mr. Cureatz: I doubt it. Is it Wednesday and Thursday or Thursday and Friday?

Clerk of the Committee: Wednesday and Thursday; or do members want to sit on Friday? I do not know.

Mrs. Grier: Maybe Thursday and Friday morning.

Mr. Cureatz: If we could do it Friday morning in Toronto, with Thursday outside.

Mr. Matrundola: If we are going to inspect the power stations, it would be advisable to do it at the beginning rather than at the end. I think it would be beneficial to those of us who have never seen a power station to gain inside knowledge. We would have a better idea of what we were talking about. I am familiar with some of these things, and I believe it would be very beneficial to inspect the stations.

Mr. Chairman: We were talking about doing it at the end of the briefing sessions and before we have the hearings. Are you talking about doing it at the beginning of the briefing sessions?

Mr. Matrundola: When people come in and read briefs they may be talking about things we have not seen. As they say, a picture is worth a thousand words; in this case, probably several thousand words.

Mr. Charlton: Just to comment on that, having been through it—and I think Mrs. Grier would probably concur and Mr. Cureatz as well; we had a brief discussion of this before you came in—the purpose of the briefing sessions is to bring us up to speed so we understand things. For those of us who were on the last select committee, where we did all of the tours several weeks before we actually got into discussing the issues at hand, some of that got lost.

What was said earlier in the meeting was that it might be useful if we saw the facilities in the briefing period but heard some of the kinds of things we should be looking for before we saw the facilities.

Mrs. Grier: Then we would have Hydro back, you see.

Mr. Charlton: Hydro is coming back again after that.

Mr. Matrundola: You have experience from your previous meetings so you probably know best. My point of view is that when people are told about something, if they have seen it they can picture it and put it all together.

Mr. Chairman: If there is a problem, they will have a slide.

Mrs. Grier: Hydro will have slides for every angle.

Mr. Chairman: I think the problem may be that Hydro will have too many slides.

Mrs. Grier: You will see more boilers than you ever thought possible.

Mr. Chairman: On the question of hearings, I hope the committee will agree that when we say a week of hearings, we are going to sit Monday afternoon, Tuesday, Wednesday and Thursday and reserve the Friday just in case—I say that particularly for the benefit of those who have to travel in—and not leave Monday for travel and just sit Tuesday, Wednesday and Thursday. Given the fact that we have only six weeks, I think a three-day week of sittings is a little too short.

Mr. Charlton: I concur with that. We did fairly well in the last set of hearings, but there were a couple of occasions when we could have used the Friday to more fully pursue things of interest that came up during a Thursday afternoon and we were not in a position to do that.

I think it is useful that we not only do Monday afternoon but that we hold Friday, at least Friday morning, in reserve for full exploration of something very interesting that comes before the committee that we were not prepared for.

Another comment I want to make is that in that first week of August Monday is a holiday. We also have a short caucus meeting on the Tuesday morning and I just wanted to make you aware of that. If we have to sit Tuesday morning, we will just have to—

Mrs. Grier: The morning after the Civic Holiday, you might as well start at noon on the Tuesday.

Mr. Chairman: In my thinking, particularly because of the northern members, I would have treated Tuesday like a Monday and I think we proposed to start in the afternoon. It means it is a short week. Perhaps if the committee can agree to keep the Fridays clear; we will not necessarily sit but let's not book them up. It is only six weeks, and I think we can do that.

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Mr. Matrundola: What will be the hours for this committee during the six-week period?

Mr. Chairman: I think the tradition is that we go from 10 a.m. to 12 noon, is it not?

Mr. Charlton: From 10 to 12 or 12:30.

Mr. Chairman: And then 2 p.m. to 4 p.m.?

Mr. Charlton: From 2 to 4 or 4:30: depending on what we get in the way of requests for presentations you address them flexibly.

Mr. Chairman: I think it is kind of like the courts, if I could use that analogy.

Mr. Matrundola: When people are coming in from out of town they are coming in on Monday morning, and we are sitting Monday afternoon already. The people from out of town are staying in town, so maybe it would be worth while to try to sit from 9 a.m. to 12 and maybe from 1 p.m. to 4 p.m. I would rather work that way and have more time—one hour for lunch is plenty—than waste a lot of time coming down here all the time.

For me, I am in town. For the people from out of town, I believe that if we can do whatever we have to do in the least possible time, then probably we will enjoy the free time in our constituency, our home or whatever, in the summertime. I cannot understand coming here every week to sit for four hours, and doing nothing between 12 and 2.

Mr. Chairman: We will be setting up specific times for specific deponents to give their presentations. I think the members are going to

have to review the material, and you have to work in the time to look at the material that you are going to hear the presentation on so that when you hear it you might have questions.

Mr. Charlton: You will find during the four weeks of presentations that there is not any wasted time.

Mr. Matrundola: It is most important from what I have seen in the past that when we schedule time, we do not just allow completely free time so they can talk for two hours. I believe we should schedule so much time per presenter so they know we have a schedule. If we adhere to the schedule, we will be able to achieve a lot more.

Mr. Chairman: I think that is how we will do it. My experience, though, has been that often 12 o'clock becomes 12:30 without too much trouble. I think it is quite a bit just to sit those four hours because of the preparation. We may even be asking our researcher and our consultant to brief us at 9:30 in the morning before we start the formal hearings at 10. That is a pattern that I hope to use as well, to help members be aware.

We are going to be dealing with some very technical areas, and I think the better prepared the members are before they hear the presentations, the better the result will be for the committee. So we may well be starting at nine o'clock, as you suggest, except that the formal part may not start until 10.

Mr. Matrundola: It is also important that we have an idea how long the presenters' presentations are going to be, because if they come here for a presentation of two hours and there is not enough time, it is not fair. I believe they should have an idea. If we have an idea how many people are coming, we should be able to schedule them and they will have an idea beforehand so they will be ready to go.

Mr. Chairman: That is what would happen. We usually get maybe one or two per morning or afternoon. On this, we may just hear one in the morning and one in the afternoon, with two hours per presentation. I do not think that would be untoward at all, given the subjects we will be dealing with.

Clerk of the Committee: If the committee agrees on the general presentations from the public, should I advise people when they are calling up that half an hour for their presentation and half an hour for members to question them is typical?

Mr. Cureatz: Half an hour is a long time for a presentation. I think 15 to 20 minutes is enough.

Interjections.

Mr. Charlton: You are just referring now to the unsolicited—

Clerk of the Committee: The ones that will respond to the ad we have put out.

Mr. Charlton: Yes.

Mrs. Grier: I understood we were not necessarily going to hear everybody who responded to the ad.

Clerk of the Committee: No.

Mrs. Grier: You are going to pick and choose the most useful ones.

Clerk of the Committee: Yes.

Mrs. Grier: I think you are probably going to have to make some decisions based on who they are and their presentation. You may find you have three groups that have variations of the same theme and the same approach and you want to give them each a small time, or you may have somebody who deserves a much longer time. I am not sure we can be hard and fast on who you are going to have when.

Clerk of the Committee: OK. Then we will just leave it up to the subcommittee to decide.

Mr. Matrundola: We also should be very careful, because sometimes special interest groups may come in and they are going to take one heck of a lot of time; whereas there are perhaps certain other entities that can contribute and we can learn and be able to pass on the message, and so forth, and they are going to need more time.

Mr. Chairman: Just to bring you up to date, the advertisement we put out specified written depositions. I think we have been telling everybody that we want a written deposition, that we may not listen and that we certainly will not be taking presentations that do not have a written document from which they make the presentation. Perhaps what Mr. Cureatz has said, limiting them to 20 minutes and giving us 40 minutes to question, could be the model we will expand or contract, depending.

I hope we can find a way to use our time to full benefit. I am very conscious of the fact that we only have six weeks and of the fact that could be eaten up very quickly if things are not controlled. We would like to be fair to everybody.

Mrs. Grier: It will all fall on the chairman. It will be all his fault.

Mr. Chairman: Yes. It will be all my fault and you can blame me.

Mr. Matrundola: My interest is to try to deal with it in the least possible time. I am not

interested in coming down here very late. I am interested in doing it fast. If we could do it in one week, it would be great.

Mr. Chairman: What about the feelings of camaraderie we are developing?

Mr. Charlton: I think the point you have to understand is that the kinds of hearings this committee will be doing will be unlike anything you have done in the last nine months. You will not find very much repetition in the presentations before this committee. They are all very technical. The stuff we get from Hydro will be complicated, and the questions that result will probably make it even more complicated.

I think you will find that it is a very onerous task. It is not like hearing briefs on Sunday shopping where you hear the same brief 62 times a day. It is a different ball game altogether.

Mr. Chairman: Are you suggesting we might shorten those hearings?

Mr. Charlton: No. I am suggesting it would not be possible to shorten them.

Mr. Chairman: I meant the hearings of the standing committee on administration of justice.

Mr. Charlton: The justice committee hearings? No; I think people who propose that kind of legislation have to suffer through those kinds of things.

Mrs. Grier: Well said.

Mr. Cureatz: Speaking of that, I have to say to the committee members that I have a great deal of interest in the select committee on energy, but I am also on the justice committee. I have arranged through the whip's office, and I am doing my best, to be at the front end and the back end of the energy committee. It is the middle part that I will probably miss, but I will rely on other committee members. I apologize to them.

Mr. Chairman: Your presence will be sorely missed.

Is there anything else you would like to speak to? Is there anything else any of the members would like to add?

Mr. Richmond: I have a comment. I wanted to mention in response to Mr. Matrundola's concerns about how we are going to juggle all the witnesses—you may have seen our staff working on other committees—I will be preparing a summary of all the depositions we get. That document will probably make your job easier in terms of keeping tabs on everything.

Mr. Matrundola: Very good. Thank you.

Mr. Chairman: Are there any other comments or thoughts people would like to make?

Shall I adjourn the meeting until two o'clock on Tuesday, August 2, at a place to be announced?

Mr. Cureatz: Is that firm?

Mr. Chairman: Yes.

Mr. Chairman: Tuesday, August 2. We hope we will have a room with a comfortable temperature in which to have our hearings.

The committee adjourned at 4:19 p.m.

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SELECT COMMITTEE ON ENERGY

- Chairman:** Carrothers, Douglas A. (Oakville South L)
Vice-Chairman: McGuigan, James F. (Essex-Kent L)
Brown, Michael A. (Algoma-Manitoulin L)
Charlton, Brian A. (Hamilton Mountain NDP)
Cureatz, Sam L. (Durham East PC)
Grier, Ruth A. (Etobicoke-Lakeshore NDP)
Matrundola, Gino (Willowdale L)
Ray, Michael C. (Windsor-Walkerville L)
Runciman, Robert W. (Leeds-Grenville PC)
South, Larry (Frontenac-Addington L)
Sullivan, Barbara (Halton Centre L)
- Substitution:**
Fleet, David (High Park-Swansea L) for Mrs. Sullivan
- Clerk:** Manikel, Tannis
- Staff:**
Richmond, Jerry M., Research Officer, Legislative Research Service



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Hansard

Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy

Electricity Demand and Supply

First Session, 34th Parliament

Tuesday, August 2, 1988

Speaker: Honourable Hugh A. Edighoffer

Clerk of the House: Claude L. DesRosiers

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Contents of the proceedings reported in this issue of Hansard appears at the back, together with a list of the members of the committee and other members and witnesses taking part.

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Tuesday, August 2, 1988

The committee met at 2:10 p.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY

Mr. Chairman: Perhaps I can call the meeting to official order now. I would like to thank everybody for coming out this afternoon. The air conditioner we have in this room does a very good job of cooling the room, but it also creates a little bit of noise; so I hope we can keep extraneous noise as low as possible in the room so that everybody can hear what is being said. I find if there is a lot of paper-shuffling going on over the noise of the air conditioner, sometimes the committee members cannot hear. I ask the co-operation of all members and those in the audience to allow us to proceed despite the noise.

The committee is going to hear from two witnesses this afternoon, the Honourable Robert Wong, Minister of Energy, and Robert Franklin, chairman and president of Ontario Hydro. I see Mr. Wong is here, so perhaps, Mr. Wong, I can turn the meeting over to you. Do you have a presentation, do you have a paper to hand out, or has that already been handed out to the members?

Hon. Mr. Wong: I think it has been handed out.

Mr. Chairman: All right. Then perhaps we can ask you to proceed.

MINISTRY OF ENERGY

Hon. Mr. Wong: Mr. Chairman, members of the select committee, good afternoon. I understand I have been given about an hour. What I would like to do is make a statement and then make myself available for the balance of the time for questions, if that is acceptable.

With me today is Larry Moore, co-ordinator of electricity planning from the Ministry of Energy.

I want to say at the beginning of my remarks that I believe this committee is doing very important work and that it has my full support and co-operation.

I have organized my remarks under three main points. First, I want to outline for you the main energy issues we are facing today and over the next few years. I think it is important for me to give this committee as accurate a view as I can of the government's energy plans so you will know the perspective I bring to this subject.

Second, I want to offer my views on why the select committee on energy is so important at this point in our work in planning Ontario's energy future. I want to put the work of the committee into the broader framework of the electricity planning situation in Ontario today.

Third, I want to discuss very briefly the three new documents on electricity planning I have brought with me today. With your permission, Mr. Chairman, I plan to table them officially with the committee in the hope that you and the members will find them useful.

Let me begin with the major energy issues as I see them. It occurs to me that we are in a very privileged position in Ontario. Our economy is very strong and shows every indication of continuing to perform very well. The engines that drive our economy are fuelled by energy. To be an effective economic engine, however, Ontario's energy supplies must meet three basic criteria.

The first criterion is that energy supplies must be adequate to our needs. More than 80 per cent of the energy we use is purchased from outside the province, and the government must work to ensure we have sufficient supplies.

The second criterion is that energy supplies must be affordable. Ontario's energy consumers, large and small, must be able to purchase the energy they need to make our society run.

The third criterion is that energy supply and uses must be compatible with the clean environment our people expect and demand.

When I became Minister of Energy about 10 months ago, I compared our present energy situation against these three basic criteria to see how we measured up. The first question I asked myself was, do we have enough energy? The answer is that we do have enough, at least for now, but according to our best estimates, energy demand in Ontario will continue to grow right into the next century.

Clearly then, one of the main issues facing the government and the Ministry of Energy is choosing the best means of ensuring that energy supplies are adequate to the needs of our people, particularly over the next couple of decades.

The second question I asked was whether our energy supplies are priced reasonably. Again, the answer is a qualified yes. To ensure the

economic growth and prosperity our people want, the government must continue to work to ensure that Ontario consumers and industries have access to fairly priced energy supplies.

The third question I asked myself was a great deal harder to answer: Is the environmental impact of energy use in Ontario acceptable? It is a complex question. The fact is our energy supplies afford us an enviable lifestyle and one of the highest standards of living in the world, but many people have begun to question the pace and the overall cost of economic growth.

In the past, public policymakers have faced and met many energy challenges. We have developed the natural energy of Niagara Falls, we have released tremendous energy by splitting the atom and we have evolved a society that has grown on the assumption that we could produce or purchase all the energy we need.

Our future holds many challenges and many choices. One of the most difficult will be ensuring that the pace of economic growth does not outstrip the capacity of our environment to absorb it. Many of you will be familiar with the challenges described in the Brundtland commission report to the United Nations dealing with sustainable growth. The question is, do we in Ontario have the economic and social will to come to grips with the implications of this report?

To try to answer the environmental question, I will simply say that the environmental price we pay for energy in Ontario is high. I believe the environmental cost of energy use in Ontario can and will be less in the future.

Alongside energy security for our people, the government's interest in energy matters focuses on three broad areas: energy and the economy, energy and the environment, and energy and public health, safety and wellbeing. The government's interests and responsibilities in these three areas go deeper and reach farther than any single group or institution.

In Ontario, we are fortunate because we have so many different choices and options to select from, but we must not lose sight of the fact that having choices implies making some decisions along the way. We cannot discuss our options for ever. As Minister of Energy, I must maintain energy choices for our society, but as legislators, we must also make choices on behalf of the public. When we make those choices, I believe they must be based on the best possible information.

I have already made one of our choices known, and that is that this government is committed to a more energy-efficient Ontario. Energy conserva-

tion and efficiency make sense from all perspectives—economic, environmental and social. Our economy must become more energy-efficient so that we can keep pace with improvements being made abroad and maintain our competitive position. Our environment demands that we conserve resources and minimize the impact of the energy we use to live, prosper and grow. Our society at large can benefit from conserving and using energy more efficiently, for a whole range of reasons.

My vision of our future includes a much more energy-efficient Ontario, and I have been working towards that goal for almost a year now. Our government, as you know, has been a strong supporter of energy conservation and efficiency. In June, the Energy Efficiency Act received third reading. I might add that it received the unanimous support of all three parties in the Legislature, and I thank members of all parties who contributed towards that result. The Energy Efficiency Act is the first legislation of its kind in Canada. It will lead to permanent structural improvements in energy efficiency in Ontario.

In the coming months, I will be announcing new initiatives for energy conservation and efficiency in the municipal sector to ensure that our public institutions and facilities are as efficient as they can be. As the members know, the government has also moved to send a strong signal that the provincial government will continue to exercise its jurisdiction over electricity and carry out its responsibility to Ontario's electricity consumers.

During the last week of the legislative session just concluded, we introduced amendments to the Power Corporation Act which assert Ontario's authority in electricity policy matters. We sought to ensure that Ontario's electricity system will be used primarily to benefit the people of Ontario and Canada, notwithstanding the implementation of the trade agreement between Canada and the United States.

The proposed amendments allow cabinet to authorize Ontario Hydro to undertake economic development initiatives in specified areas of the province.

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As Minister of Energy, my job involves a great deal of advocacy, not for any one interest group or organization, but for the government's energy principles and policies. We are at or near a crossroads, a time for choosing the kind of energy future we want. In a real sense, what we are doing now is opening up Ontario Hydro's planning process to public debate.

This committee can be an important factor in determining the choices we make. As your first major task, you have chosen to review Ontario Hydro's proposed approach to planning, Meeting Future Energy Needs: Draft Demand/Supply Planning Strategy, or DSPS. I believe this is a very appropriate subject. The DSPS is one of the most important strategic electricity planning documents we have ever seen in Ontario.

Your review of Hydro's draft strategy will give the public an opportunity to comment on the utility's future direction. Throughout these hearings and in its final report, this committee can help guide Ontario into the secure energy future our people expect and want. Electricity is a form of energy we all use. It is also the only major form of energy we produce in large quantities in Ontario. For that reason, we have to be especially careful about how we plan for our future needs.

That is why the work of this committee is so important. Ontario Hydro has produced a document that seeks the direction of public policymakers for the future of our electricity system. With your help, I believe we can give them the direction they need.

As the members of this committee will recall, the previous committee played an important role in our decision to complete the Darlington generating station and to conduct a review of nuclear safety. I would note that as a result of the nuclear safety review conducted by Professor Kenneth Hare, we know Ontario Hydro's nuclear stations are being operated safely and at high standards of technical performance.

Dr. Hare's report also contained a number of suggested improvements. Later this month, I am expecting Ontario Hydro's response to the recommendations of Dr. Hare's report, and over the coming months I anticipate we will continue to see long-term benefits emerging from Professor Hare's study.

The select committee had a share in these developments and it has a key role to play here again in advising the government about electricity planning over the next 15 to 25 years. I am looking to the members of the committee for their recommendations.

I mentioned at the beginning of my remarks that I have brought three new documents with me for your information. Two of the documents are reviews of the demand/supply planning strategy—one a review by government ministries and another by an independent panel of technical experts. The third document is Ontario Hydro's Plan for Electricity Conservation and Efficiency, a document I asked Hydro to prepare by the end

of June. Ontario Hydro now has measurable conservation objectives set out as targets to be achieved over specific time frames.

The plan identifies potential demand reduction initiatives that add up to 5,500 megawatts by the year 2000, through a combination of efficiency improvements that are partly funded by Hydro, improvements undertaken by consumers on their own, load shifting and parallel generation.

The plan states that about a third of this target will have been achieved by 1993. Hydro would spend \$1.2 billion over the next six years on all these measures. Most of the demand reduction would occur in the areas of parallel generation, load shifting and customer-driven conservation, rather than incentive-driven conservation.

I am encouraged that Ontario Hydro is responding to the government's policies and priorities in this area. This plan represents a first step on the road to a more energy-efficient Ontario. However, I must note that I am disappointed that the total amount of electricity conservation included in the plan has not increased substantially over Hydro's previous estimates. The totals in the plan would do little to defer the date when new generation will be needed. The targets established to 1993, however, are encouraging, but more substantial steps are needed in the next few years to achieve greater savings.

The previous select committee on energy made a number of recommendations regarding Ontario Hydro's accountability. In the coming months, the government will be making further amendments to the Power Corporation Act. These amendments will clarify the relationship between the government and Ontario Hydro and set out a defined policy framework within which Ontario Hydro will operate.

I would like to move on to mention the other two reports I have brought with me today. Both reports deal with Ontario Hydro's draft demand/supply planning strategy. The review of the DSPS by government ministries was co-ordinated by the Ministry of Energy.

In addition to the Ministry of Energy's comments on the draft strategy, the review document includes comments from nine other ministries, including Municipal Affairs; Housing; Industry, Trade and Technology; Environment; Transportation; Agriculture and Food; Northern Development and Mines; Treasury and Economics, and Natural Resources. I am pleased by the degree of participation and co-operation we received from the other ministries which reviewed this important document.

The government review of the DSPS ended in broad support for several of the strategies proposed in the document, as well as some concerns. I would like to table the document with the committee and would be happy to come back and discuss it with you when you have had a chance to examine it.

I would also like to table a second document: the review of the DSPS by an independent electricity planning technical advisory panel, which I selected earlier this year. I asked the panel to take a hard look at the technical content of the DSPS, primarily to determine whether the strategy contains an adequate technical basis for Ontario Hydro's planning.

As members will see, the technical advisory panel was composed of energy experts from both Canada and the United States. Their report contains a total of 20 recommendations. The panel felt that significant improvements can be made in Ontario Hydro's approach to power-system planning. In fact, the panel makes a specific recommendation that the government take steps to improve the system planning process.

The panel recommends that Ontario Hydro improve its ability to incorporate risk analysis in its planning, as well as demand forecasting, and further recommends that Hydro devote more resources to demand-side options.

The panel also recommended that there be an independent expert examination of Ontario Hydro's cost estimates for Candu reactors. Clearly, the cost estimates used for the Candu option are central to Ontario Hydro's planning process. It is essential that Candu cost estimates be as accurate as planning estimates can be. The government is moving to set up an inquiry process to address this issue, and I will be announcing the details within the next few weeks.

I believe it is imperative that we have an accurate accounting of Candu costs. This information can have a significant impact on the decisions we make about our future generation options. Once the committee has had an opportunity to review the three documents I am tabling today, I would be happy to come back and discuss them with you. As well, I will ensure that you have access to Ministry of Energy staff, staff of the other ministries and to the chairman and members of the technical advisory panel.

I have talked about several things today. I have talked about the major issues we face and some of the choices that are open to us. I have described the three new documents on electricity planning that I brought with me today. I have set out my

priorities for you and described the process we have put in place to open up electricity planning to the public. In my view, it is the public dimension of the process that is key to our efforts. My goal is to break down some of the barriers and evolve a planning system for electricity that is accessible to the people.

I believe the people must understand the choices that are available. The best thing we as a government can do, and the most responsible thing we can do, is to shape public policies that are based on the views of an informed public. The people, for whom the system exists, must know what the choices are, and they must have an adequate opportunity to make their views known.

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I want to conclude with a challenge for this committee. The government's goal is a more open and more responsive electricity planning system. This system must support and encourage a more energy-efficient society in a province that must continue to be competitive and positioned for growth in a rapidly changing world. Your challenge in these hearings will be to contribute the vital public dimension to the system we are seeking. Your work can help ensure that our future policies and priorities are truly responsive to the needs of this province and its people.

Mr. Chairman: Thank you very much, Mr. Wong. Mr. Wong has agreed to stay with the committee to allow the committee to question him. I would like to allow that to go on until perhaps 3:15 p.m., if we could agree to that. We could then move on and have Mr. Franklin speak with us. That gives us about 45 minutes. Perhaps we could move to questions.

Mr. Charlton: I have some concerns about the timing of some of the events that are occurring or that have not yet occurred, and I refer specifically to comments you made on page 13 of your presentation to us today. You talk about, "In the coming months, the government will be making further amendments to the Power Corporation Act." You refer to studies and responses that came out of the report of the last select committee two years ago.

You are specifically dealing in your comments with the policy framework within which Ontario Hydro will operate. I guess that specific recommendation in the last select committee's report focuses, for me, on the major problem we have as a committee, having had a task set out for us and not having the policy framework within which Ontario Hydro is supposed to operate by which to

measure either DSPS or the general direction Hydro is moving in.

We have a situation where we do not know what policy framework your government is going to come down with, and neither does Hydro. They are halfway through, as you yourself say, an extremely important planning process that is going to have a major impact on both Hydro's future operations and potentially on the economy, the environment and the health and wellbeing of Ontarians, and we do not have in place the framework by which to measure that whole question.

Can you comment on that in terms of how you see this committee doing the job you have asked it to do and how you see imposing a policy framework on a process that is two thirds or three quarters completed?

Hon. Mr. Wong: Let me answer Mr. Charlton. He has raised a very good point. I think that, unfortunately, the world does not move in straight lines and simple textbook situations. We covered a lot of ground with respect to the amendments to the Power Corporation Act, and had the legislative timetable permitted, these amendments might have been introduced prior to the end of June or prior to the rising of the House and that would have made our lives easier. But be it as it is, I would say that the real work situation is that here we are and we have some multibillion-dollar decisions to make with respect to the planning of Ontario's electricity planning system.

I think the policy framework we are talking about is quite clear in several regards. First of all, the government indicated in the throne speech of last fall that one of the main reasons for making suitable amendments to the Power Corporation Act was to ensure there was a clear relationship between Ontario Hydro and the Ontario government, and between Ontario Hydro and the people of this province. We wanted to make sure as a government that Hydro was more accountable, so that in whatever directions the planning was going, the utility would be more accountable.

What is clear to me is that this government's policy framework includes a conservation-first policy, which was introduced in 1986 and which we have enunciated, hopefully, more clearly now. I might add that in February the cabinet directed Ontario Hydro to come up with a specific plan on energy conservation and efficiency. Before the end of June of this year, as I indicated earlier, we did receive a plan. That is a first step.

Second, and I would like to say this in the same breath, conservation and energy efficiency, along with as much independent power generation as is possible, are two fundamental building blocks of the energy policy framework we are talking about.

I hope that helps to fill in some of the gaps. I realize we do not have all the amendments to the Power Corporation Act in front of us, but that is the reality.

Mr. Charlton: I do not really think it does fill in the gaps. I think what you have done for us is to set out, from your perspective, the framework within which those of us who have been involved with Hydro in the past see a framework to guide Hydro being developed. For example, you talked at length in your presentation today about the relationship between energy and the economy, energy and the environment and so on and so forth.

Unless we have a clear understanding of your intentions as a government for the future in terms of how those specific things are viewed and weighted in a planning process, how can we be in a position by the end of the process to determine whether a specific direction is appropriate or not in terms of what a framework would look like in the future? How do we as a committee ensure that whatever we recommend is in fact looking at all the potentials and weighting them properly in terms of how they relate one to another?

Hon. Mr. Wong: As I listen to you, I ask myself about the possible amendments to the Power Corporation Act that the government has discussed in past months. I honestly feel that the main thrust for arriving at a proper set of decisions has really been embodied in this very thorough kind of process we are going into.

The DSPS, as we all know, took approximately three years for Ontario Hydro to prepare. To make sure that there was adequate input from the public and from special interest groups, this select committee on energy was formed.

In addition, because we realize there are many complex issues involved in electricity planning, we wanted to make sure the document contained the information that formed the proper technical basis—not only facts, but methodology—so that we could make the proper choices and proper decisions. As you know, a technical advisory committee of experts was created.

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Third, to be practical, we also wanted to make sure that all of the different Ontario ministries that have a direct bearing on the evolution of this policy would have their input.

So here we are with the select committee which now has the benefit also of the other reviews. Keeping in mind also that time is moving on, if we do not make these decisions, I estimate that within the next 18 to 24 months we will put ourselves in a position where we could begin to constrain the economic growth of the province. I think we do have the policy planning process well in hand, and I think the fact that we are here discussing the heart of this very issue indicates that the process is healthy and progressing.

Mr. Charlton: With one last comment, I will pass the floor. The minister's comments today certainly do not indicate or reflect a complete understanding of what I believe the last select committee on energy recommended in terms of developing guidelines and a framework in which Ontario Hydro should operate. I think perhaps the minister and his staff should have a look at those and have some discussions with the people from the ministry who were involved in those hearings about the recommendations that were set forth. If you look specifically at recommendation 4, the kinds of things you have said today do not reflect, to me, that this is where we are going to end up. If that is your response to the last select committee report, I would be seriously concerned.

Mr. Chairman: Did you want to respond or could I move on?

Hon. Mr. Wong: I just want to say that, to use recommendation 4, which stated, "The Ontario government should specify the social, environmental and political framework within which Ontario Hydro's planning is to take place," as a specific example, the political and/or the government framework are embodied in amendments to the Power Corporation Act. As I indicated, had they been tabled in the House earlier this year, we would not be having this discussion. It is unfortunate, but it is not for lack of trying.

I hear what the member is saying. I also want to add that in the general category of planning the electricity system, under which recommendation 4 is situated categorically, in my mind there are a whole host of other recommendations of the last 1986 select committee that deal with that subject. I think there also may be some wisdom, not in dealing with each one of them in an isolated way, but in dealing with them together, because there is some synergism and interaction in dealing with these recommendations that came forth from the last select committee.

Mr. Chairman: I would like to note for the benefit of the members that I have a reasonably

long list of people who would like to ask questions. We now have about half an hour or 40 minutes left, so perhaps we could keep the cycles and questions fairly brief.

Mr. Cureatz: I am pleased you have the opportunity of attending before the committee. I have had the opportunity, along with maybe one or two other members, of sitting on this esteemed committee for quite a number of years. As I look about the crowd from Ontario Hydro and the Ministry of Energy, there are a lot of new faces, but there are one or two old faces that have been around for a while.

With that in mind, the first thing that crops up is on page 5. You indicate at the bottom, "I believe the environmental cost of energy use in Ontario can and will be less in the future." With the amount of investigation the various select committees have made over the years, it has come to my attention that there are probably three major areas of the production of electricity: thermal, be it oil or coal; hydro, and nuclear. Unless there is a new method on the horizon that is going to be harnessed within the next three or four months, which I do not think there is, we are limited to those three areas of the production of electricity.

Now, following along Mr. Charlton's questioning in terms of your government's initiative on using the three available methods we have, I am curious about how you are going to be able to implement in the future a less costly effect on the environment. If it is thermal, we have acid rain; if it is hydro, we are going to be flooding valleys; if it is nuclear, goodness, we spend a lot of time on the disposal of nuclear waste, which we still have not maybe comfortably resolved. I am just wondering, I suppose, about the terms of your direction.

Hon. Mr. Wong: The alternatives you have raised, Mr. Cureatz, are supply-side options. I think the important management demand-side option of conservation, which I mentioned before, is the main thrust of the statement on page 5. Under the targets established by Hydro at present—5,500 megawatts of potential conservation, which as you know is equivalent to one and one half Darlington nuclear plants—conservation and energy efficiency can help us to save kilowatt-hours. A kilowatt-hour saved here is one that can be used over there.

I might add I am pleased to learn for the first time, and I do not go back that far, that Ontario Hydro, in its planning strategy document, has talked about demand-side as well as supply-side options together in trying to help this government

and this province arrive at an appropriate electricity planning future between now and beyond the year 2000. I think conservation is the key method by which we can have more energy available over here and not burden the environmental picture.

Mr. Cureatz: Your response is basically conservation.

Hon. Mr. Wong: It is not glib.

Mr. Cureatz: No; I do not mean to be glib either.

Hon. Mr. Wong: OK; I appreciate that.

Mr. Cureatz: I am trying to put it in a nutshell.

Hon. Mr. Wong: Yes. Statistically, out of 28,000 megawatts of capacity the Ontario Hydro system can provide us with, we are talking about 5,500 megawatts. We have to measure it in relation to that. If that goal is achieved, that is significant. If more can be achieved, which would be desirable, all the better.

Mr. Cureatz: Mr. Chairman, I have a long list of questions. Possibly you might monitor my time so that if other individuals want to get on, I will not be so rude as to take up all the committee's allotment with the minister in front of us.

With conservation, I notice you are "energy monitoring." Have you read this press release? It sounds like Lorne Henderson reincarnate. He is back handing out cheques. It looks as if you and none other than, let me see, "President Robert Franklin at a cheque presentation"—even we were not so bold as to say "a cheque presentation" when we were there. Were we that bold?

Mrs. Grier: Yes, you were.

Mr. Cureatz: We were? I never had the opportunity of handing out the cheques since I was not in cabinet that long, "a cheque presentation ceremony held today at Molson's Brewery in downtown Toronto."

You are instituting conservation, I suppose in fairness, by encouraging industries to conserve. If we are going to follow that route, I will appreciate that.

Yet I am concerned, because you make a statement on page 13 at the top, and possibly it was not clear for me: "However, I must note that I am disappointed that the total amount of electricity conservation included in the plan has not increased substantially over Hydro's previous estimates." Does that mean your ministry's estimation of conservation does not supersede what Ontario Hydro is estimating and hence

conservation may not be the be-all and end-all? Is that what you are sort of trying to say here?

Hon. Mr. Wong: That is a very perceptive question. Let me say that we were looking at the conservation figures presented in the DSPS and then compared those with the targets presented to the government prior to June 30 in response to cabinet's request for a conservation plan. The numbers had moved from the 5,300 level to the 5,500 level in terms of megawatts. Just on the surface of the numbers, the question is, was there that much of an improvement?

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I think also in looking at the numbers, we can break them down into the different categories. If I could take out the natural conservation or what people would normally do if they had the right information, which perhaps we do not have as much control over, and if you look at what the utility, Ontario Hydro, has control over—incentive-driven conservation, spending money to get it, load shifting, parallel generation—the numbers, by my calculations, go from 2,300 to 4,000.

Nevertheless, looking at all of that, we are still saying we think there is room for greater improvement. Let's take a harder look at this, and wherever it is practical, let's see if we can get the conservation targets higher in the plan.

In general, let me just take another 30 seconds to comment on the energy monitoring question. We think that is a very good program, because when companies that use a lot of energy spend a few extra dollars now in order to monitor and meter the energy flows, and can conserve, save and use their equipment more efficiently, this usually results in some annual savings. There is a payback period. If, after a few years, a company like this can receive the payback, then every annual savings thereafter of course becomes gravy for that particular company.

Multiplying this by all the companies that could be doing this and all the large municipal buildings that consume a lot of energy, I do not have an exact figure for you for Ontario, but for Canada versus other countries, like Japan, the United Kingdom, Sweden—our industrial competitors—it has been stated that we might be behind by as much as 20 per cent or 30 per cent in terms of energy efficiency.

If our goal is to become more energy efficient, in the case of Ontario, if you take whatever the correct percentage would be on our annual \$13-billion energy bill, by the time we have a more energy-efficient Ontario in place the way we want it, which might be some time in the

mid-1990s or a little bit later, it is estimated we could be saving something of the order of several billions of dollars. Those are dollars that would not be going outside Ontario to buy oil and gas. Those would be dollars that would recirculate within the Ontario economy. So these kinds of programs are very important to the overall picture.

Mr. Cureatz: Unlike his forgetfulness of not inviting me to his tour of the Darlington generating station in my riding, I know the minister will be more than obliged to let me know and allow me to be present when he is handing out the money to that particular company on the energy monitoring system, and likewise with any other private member when he is out touring the province.

I am sure there must be a crossover, notwithstanding your hopes on conservation, where there will be a limit that can be conserved in terms of electricity being consumed, and as you indicated, the projection of the committee's investigation is some 15, 20 or 25 years. Have you or your ministry then brought into force the approach that is going to be taken after the conservation has been met in terms of the production of electricity in one of those three areas—thermal, nuclear or hydro? Have you thought about which one you are going for?

Hon. Mr. Wong: Hydro is clearly in the lead in terms of our preferred option. We would like to do as much of the renewable as possible. This would be a good strategic element with respect to thermal, nuclear and all the other possibilities. I think that is why we are holding these hearings, so that we can get the input, not only technically but also from the people, so the people of the province can speak out as to which option they prefer.

Mr. Cureatz: Finally, so that other members may have an opportunity of some questions, with those various options available, I see no real definite statement about the possibility of cogeneration.

That brings to mind the problem I think we are encountering in Metro Toronto specifically, a topic dear to my heart in recent times, and that is the placement of garbage, possibly in my riding of Durham East and, more particularly, the town of Newcastle. Do you foresee any kind of specific initiative of cogeneration, of thermal plants for the use of burning of garbage in the production of electricity?

Hon. Mr. Wong: Again, I await the input of this complete review, but I think it is clear that the one advantage of cogeneration is it provides

our electricity planning system with lower-cost, short-run flexibility, so that we can install new capacity in place, as I say, in a shorter time frame in order to meet peak needs as opposed to base needs. There is a role for cogeneration. Of course, with cogeneration we want to be extra careful that whatever set of equipment is used meets our environmental standards.

Mr. Cureatz: Just as a final supplementary, have you spoken to the Minister of the Environment (Mr. Bradley) on the possibility of cogeneration?

Hon. Mr. Wong: Yes. As you probably know, he has a review process ongoing whereby we will look at many of the projects both of our ministries get involved in, keeping in mind our goal for society of having as clean as possible an environment to meet specific targeted standards. My goal, as Minister of Energy, is to have safe, secure supplies of energy at reasonable cost. What we have to do is make sure these goals can be met in a timely fashion. I think one of the complaints has been that the whole process has taken too long, and this is something both of our ministries are working on.

Mr. Chairman: Just for the benefit of the committee members, the list at the moment is Mr. Matrundola, Mr. Runciman, Mr. South, Mrs. Grier, Mrs. Sullivan and Mr. McGuigan, so with that list and about 20 or 25 minutes, I hope we could have some co-operation with the shortness of questions.

Mr. Matrundola: I have three short questions, if possible. Minister, thank you for coming here today. We really appreciate that. When do you estimate we will have an accurate accounting of the Candu costs?

Hon. Mr. Wong: With the independent inquiry that I hope to announce in the next few weeks, the mandate for that individual or individuals will be before the end of this year.

Mr. Matrundola: Very well. How many megawatts do you feel we need to produce within the next 20 years in order to make Ontario self-sufficient?

Hon. Mr. Wong: Right now, 17 per cent of all our energy, if my memory is correct, comes from electricity and about 80 per cent from oil and gas. We are talking about \$10 billion worth of oil and gas sourcing that we would have to substitute with indigenously produced—and what is indigenous? I assume you are talking about electricity. I do not think it is an easy or practical question to answer, because of the size of these numbers. In other words, I do not think in the foreseeable

future we can become completely self-sufficient.

Mr. Matrundola: In your opinion, which is the best form of energy we can produce, as well as the safest one, the one that affects the environment the least, the one that is the least expensive to produce and at the same time the most efficient?

Hon. Mr. Wong: You got me with your second-to-last adjective.

Mr. Matrundola: Do you want me to repeat it?

Hon. Mr. Wong: No.

Mr. Matrundola: Your best estimate.

Hon. Mr. Wong: Yes. I was going to say that as I listened to you describe the list of adjectives, I began thinking about solar and wind energy. Then you talked about the cheapest, and I assume you meant cheapest per kilowatt of power or whatever.

Mr. Matrundola: The least expensive, yes.

Hon. Mr. Wong: In that case, it would not be the cheapest because the technology is still developing. The cheapest is conservation, because we have a kilowatt-hour here that we can use over there.

I suppose the next, in my mind anyway, might be the falling water or the hydraulic sources. They have proven themselves to be cost-effective. In Ontario Hydro's annual report, you have probably seen the chart there that shows you the pecking order of hydraulic versus nuclear versus coal, although I caution everyone that we should be dealing in constant dollars rather than—
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Mr. Matrundola: In other words, your recommendation would be that we would try to save energy as much as we can because what we save we will not produce. As the saying goes, "A dollar saved is a dollar earned."

Hon. Mr. Wong: Right.

Mr. Matrundola: Very well, thank you.

Hon. Mr. Wong: You see, if we had to build another Darlington—as you know, the current price tag is around C\$11.5 billion, so one and one half Darlingtons is, I guess, just less than \$20 billion. We are talking about huge dollars of savings through conservation.

Mr. Matrundola: Through conservation, all right, thank you.

Mr. Runciman: I am curious about one thing. In 1984, when the study was initiated, it was called the demand-supply options study and at some point in 1987 the decision was made to

change the name of the study. I guess I felt, and a lot of us felt, that there were going to be some specific recommendations or options coming out of this report.

Why did that change take place?

Hon. Mr. Wong: OK, Mr. Runciman, that is a good question. I am going to answer it, in part, and suggest also that you ask Mr. Franklin later to get a thorough perspective from Ontario Hydro.

Mr. Runciman: I intend to.

Hon. Mr. Wong: To me, the options document emphasized, concentrated more on what I would call factual considerations, information that should be considered in developing a plan, ultimately the preferred plan.

What the planning strategy did was try to process all of these facts and it came up with, in my mind, 52 strategic elements. For example, we should consider this type of option over that type of option, or whatever. We are moving down the decision-making path here with public input towards what I would call the preferred plan for Ontario's electricity development for the next 15 to 20 years.

So we have gone from the options, to strategic elements, to the development of what I ultimately look for, which is a preferred plan.

Mr. Runciman: In 1987, I think it was in September, there was apparently a leak in the media about the fact that the demand-supply options study was recommending a nuclear power plant by 2002, which is 14 years from 1988.

To your knowledge, was that in the original report and deleted or watered down in some respect?

Hon. Mr. Wong: I can honestly say that, to my knowledge, I am not aware of the nuances, not having looked at the matter at that time.

Mr. Runciman: I guess I am somewhat concerned whether you and Hydro are being completely forthright with the Legislature. I believe you are, but I am wondering about Hydro, and hopefully we will get into this with Mr. Franklin.

If you are talking about 18 to 24 months to make a decision, this study was initiated in 1984, supposedly to meet 1986 commitments; three years of intensive study and no recommendations. We may be in a position where we will have no choice but thermal because of the time lines. Are you suggesting, if we do not take action here—and we have you talking about conservation and we have the manager of the

Darlington facility saying: "Look, we've got to have more generating stations. We will be in serious trouble by the year 2000 if they do not have another power plant on-line."

One side of the corporation is saying something totally different from the chairman and the president of Hydro. I am just wondering where we are going and why we have not seen some decisions or recommendations at this stage. I respect that you are going to say, "We are looking for the recommendations of this committee, among others." But have you not already begun to make some decisions about the next option, or set of options?

Hon. Mr. Wong: Yes, I think we have. It is very clear on conservation and the independent power generation as prime thrusts of where we should be heading on energy policy as it pertains to electricity. Let me answer your question. Over the last 10 months, we have initiated this three-phased approach towards the analysis and review of the DSPS, as I mentioned before.

I do not know if I used the term "revolutionary" or "evolutionary," if this would properly characterize and capture what is happening here, but I believe that the public, the experts and also the government ministries will all have had their opportunity to have their input. So the time frame was tight and even as you people, I think, in this committee know, you probably wish you had more time. We all wish we had more time but we do not have that luxury, so the time frame here is hopefully to have this part of the review completed by December 31, 1988.

Thereafter, we plan as a government to give that information to Ontario Hydro and say: "Now you have the latest but also the best input we can give to you. The select committee has this list of recommendations received from this process. You have opinions from other technical experts outside of Ontario Hydro and you also have the realities being suggested and/or imposed by the government ministries themselves."

Rather than giving Hydro a long, long time to do this, we feel that we have to get moving with it. I sense your, perhaps, sense of urgency. We are going to be making clear that we would like to have that preferred plan to the government by the middle of 1989.

Again to make sure that the public has input and that our big utility here is, in that sense, accountable to the government and to the public, we will make sure that that preferred plan document, sometimes referred to as the resource plan document, will be aired, reviewed again by a select committee or a standing committee of the

Legislature because we are making, as you know, multibillion-dollar decisions.

We want to make sure we get started on the right track. At least in this case we are making the decisions I think at the beginning. I think your question to me initially was that perhaps the system was half way into the development and construction of a big nuclear plant and then some decisions had to be made. So hopefully we are at the beginning this time.

Mr. Runciman: I just hope we do not study it to death and get forced to make decisions that are less than attractive.

I have one final question. I am curious about how the free trade agreement impacts on demand. I am looking at major assumptions of the DSPS and I do not see the free trade agreement listed among those major assumptions. But Ontario Hydro makes a submission to the Ontario Energy Board indicating that the cumulative effect for six of the major industries is an increase in demand of about 3.5 per cent ranging up to five per cent, and for other users, three per cent. Was that not thrown into the mix in terms of the DSPS? If not, does it not throw the whole thing out of whack?

Hon. Mr. Wong: It was considered and I did discuss it with my officials. I cannot give you a precise answer right now, but I think that particular statement had a lot to do with the different time frames that are involved, also. The long-range forecasts are anywhere from approximately a 2.5 per cent annual growth rate, year over year, in demand, out for the next 15 years or so.

Mr. Runciman: Yes, 15 or 20.

Hon. Mr. Wong: In the first quarter of 1988, as I think we discussed once before, as compared to the first quarter of 1987—

Mr. Runciman: Abbreviate this, Minister. You are suggesting that whatever impact free trade has will fall within that 2.5 per cent real growth projection?

Hon. Mr. Wong: Let me say that that 2.5 per cent growth has a plus and minus factor to it. That is why one of the recommendations of one of these studies cautions the people who are making the decisions on the planning not to pick a single number or a single line, but to talk about a band of options or a spectrum of strategies. I would simply say that the significance of the free trade agreement is not hugely significant. It may be significant in a more minor, rather than a major way.

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Mr. Runciman: So it does not distort the recommendations or opinions of this—

Hon. Mr. Wong: No. I think it is one of the factors we, as planners and forecasters, would have to consider, but I do not think that that one factor itself, that agreement is going to cause us to make more dramatic changes than have already been in the mix. I would suggest that since you have the benefit of the chairman and president of Hydro here today, you direct the question to him also.

Mr. South: As a conservation objective, is not the zero per capita increase practicable?

Hon. Mr. Wong: I am sorry, I do not understand the zero per capita increase.

Mr. South: A zero per capita electrical consumption increase.

Hon. Mr. Wong: Not necessarily, because if you had 100 users of electricity who cut back, and then you had one big user who used it all, you can see how your per capita numbers, the average would—

Mr. South: With the type of industry we are getting now, such as computers and these types of things, it seems to me it does not or should not use a lot of electricity. The smokestack industries, as they call them, are not the industries that are increasing now, so it would seem to me that would be a good way to measure our conservation measures, to set it for the province so that the per capita electrical consumption does not increase.

Hon. Mr. Wong: In response to your question, I guess I would say Ontario has an advantage of low-cost electricity. From an economic standpoint, from a business standpoint, we should recognize this advantage and make sure—I guess I am expressing what you have said in a different way—that, to the extent we can, we target some of our economic growth in those sectors that utilize electricity, which in Ontario is cheap relative to what it is in many other countries.

Mr. South: It is something we could discuss with Ontario Hydro.

Mrs. Grier: Minister, I think what I would like to try to get, before we start all the work of this committee, is some clear understanding of your expectation of the committee. As you will recall, the last select committee recommended that the DSPS be referred to the Ontario Energy Board for an examination, and that was rejected by the government. I find it interesting that in the

report released today by the Independent Technical Advisory Panel on Electricity Planning, it says the process for reviewing and approving Hydro's planning lacks independent, technically oriented public review.

Then, when I look at your statement, I find a number of confusing suggestions as to what the committee's role might be. On page 11, you say you hope we will advise "the government about electricity planning"; on page 18 you think we can "contribute the vital public dimension to the system we are seeking"; yet on page 9 you make the point that we have chosen as our first task to review the DSPS.

Can you tell us what precisely you are seeking from this committee? Are we going to be one of a whole range of responses which will be referred back to Hydro, or do you see a role for us in making some policy recommendations to you?

Hon. Mr. Wong: Thank you for very good questions. There are two important things I would like to discuss. To me, this select committee is really the key organization or vehicle for being the lightning rod, if you wish, in my mind to bring forward all the public input. Whether the public feelings, convictions and thoughts of the people of Ontario are correct or incorrect in terms of what we might call good textbook energy planning, I do not think is the important thing.

I think the important thing is that this committee provide the opportunity for the public and special interest groups to have input and I would expect, as Minister of Energy, that this committee would help this province and this government to understand what many of the thoughts and concerns are out there. That is without putting any value judgements on whether these are good thoughts or bad thoughts or whatever, based on a criterion of energy planning.

With respect to the energy planning aspect, if I could put a kind of idealistic situation, I think in the DSPS they talked about a most probable demand between now and the year 2005 of about 8,000 megawatts of power. Then, realizing that Ontario Hydro has been operating at a 24 per cent excess margin, that would mean it had better get 10,000 megawatts into place, if I have my numbers right.

But my point is that if Ontario Hydro and the government and the people of the province, through this process I described earlier, arrive at a number of decisions that help us, let's say, to address 6,000 of those 10,000 megawatts and we were left with a choice of 4,000 megawatts to put

into place on the supply side, based on the projections of the economy and the demand gross, that could become a very realistic choice we would have to make 18 months from now, after all this review is completed; at the outside, let's say approximately 24 months from now.

As minister, I would appreciate this committee's input on what factors we should consider. You may even feel so strongly as to say to me that this option is preferred over that option for these reasons, which may be technically sound and/or may or may not be what the people of the province want. I think we have to have some sense, after your more complete examination here, of where you see the priorities so that we can put this into the decision-making process of the next step, which is really the preferred plan.

Mrs. Grier: You see it as being more than simply a conduit for bringing public opinion to you as minister.

Hon. Mr. Wong: Yes, I do.

Mrs. Grier: Can I home in on one of the comments that again comes out of the technical review? That is that the panel recommended there be an independent expert examination of Ontario Hydro's cost estimates. I am interested in just glancing at the appendix to this report, that the whole costs of decommissioning and fuel waste management, which some of us have said were underestimated by Hydro, are also pointed out by the technical experts. Do you intend to follow that recommendation?

Hon. Mr. Wong: Yes, we do. We think this is fundamental to the decision-making process here and we should have an accurate accounting. My officials have already begun talking to a number of individuals. In the next few weeks, I hope to be able to be more specific about which person or persons will actually be involved in this inquiry to look into the nuclear cost question.

Mrs. Grier: Could you give us any estimate of the time frame within which that would be completed and whether that completion would in any way coincide with or predate the decision-making process that has to go on here?

Hon. Mr. Wong: I cannot answer it 100 per cent right now. To be practical, I think we would set a target of before the end of this year. Certainly, if it were practical, of course I would like to have such a report available so this committee could review it. These are my thoughts.

1520

Mrs. Sullivan: I will be quite short. Thank you for being here, Minister, and for bringing the

documents with you. These will be very useful to us and we have been waiting to receive them. Unlike Mr. Cureatz, I have not been around for a long time in this process and I am gaining a whole new jargon, as well as other information as I go through the materials.

One of the things that strikes me is that in the planning process and the strategic options that are before us for discussion, there is almost a conundrum with Hydro as the producer/seller/marketer and Hydro also as the limiting factor, the conservor spokesperson.

Ultimately, because of the conservor potential that certainly has been emphasized both at the government level and at the Hydro level, what we are seeing in a way is Hydro becoming an economic planner. I am wondering if you see Hydro in that respect and if indeed you concur that the initiatives for the electricity conservation proposals that are included in the option paper ought to rest with Hydro rather than with government.

Hon. Mr. Wong: That is a very fundamental question that I have addressed in past months. If we take the approach that there should be two different entities—one, the utility, Ontario Hydro, being on the production and generation side, and some other body that should be, let's say, running the thrust of or handling the conservation side—this means, I think, setting up another organization.

It could be anywhere. It could be within the Ministry of Energy; it could be an independent body; it could be with the Ontario Energy Board. There is a whole range of alternatives, but it does not in my mind simply mean setting up an organization with nominally one or two representative bodies there. We really would have to staff up that organization so that it had the technical expertise to be able to help the government make the proper decisions, which could be technically implemented by Ontario Hydro, the utility.

While there may be some merits in setting up an independent structure, this has been studied by people. In a number of the reports I have tabled here I think there are some references. It is interesting to note—and I take you to the bottom line to answer quickly rather than going through the complete analysis—that these people concluded that in weighing all sides of it, they felt it was still most effective to leave that function within Ontario Hydro, the utility.

In my own role as Minister of Energy, I said to myself, "I do not know if that is good enough." The public and all of us may want something that is more thorough and more definitive. What I do

think, after having given this considerable thought, and I welcome your comments, your thoughts and recommendations, is that if the government is showing its leadership and if we are making sure that it is clear to Hydro what kind of targets we would like to have achieved, then I think it is clearer to Ontario Hydro as to its specific role and what it has to accomplish in the area of conservation.

Mrs. Sullivan: How would the government express those? As policy statements?

Hon. Mr. Wong: Yes, as policy statements or simply as statements. As a matter of fact, the more thorough way would be through a policy statement.

Let's take the 5,500-megawatt figure, which we have been talking about today. I simply picked up the telephone and called Mr. Franklin and had a brief discussion with him. He understands my thoughts. I understand more clearly his thoughts. I think it is a combination. It is not just issuing statements, I think; it is a sense of understanding and it is a sense of commitment. I think we are all here for the same thing, and that is to produce the finest electricity planning operation in North America, if not the world.

Mr. McGuigan: The chairman has sent me a note to be brief, so I am going to try to be. Perhaps between the two of us, Minister, we can be brief.

I have a big subject, though, and that is the matter of agriculture and energy. As you probably know, for each calorie of food we consume in the western world, it requires 10 calories to produce that, whereas in the eastern world, for people working in the rice paddy, for one calorie of input they get 50 calories of food out of it. The reason I cite these figures is that with our type of agriculture, our growing population, the fact that we feed a lot of the rest of the world, and our high standard of living, we are going to require large amounts of energy. In fact, I would suggest increasing amounts of energy have to go into that whole system.

You have put a lot of emphasis on conservation of energy, which certainly I applaud from the standpoint that we should not waste energy. I say that mostly because of the byproducts, because energy is not something you can store. If it is out there available, in one sense, you might as well use it; but, on the other hand, in some respects it creates byproducts that affect our pollution. According to many people, it is threatening the very existence of our planet.

In that regard, I am wondering about your thoughts overall as to the role electrical energy

plays in the total picture in the future. Just to give you an extreme example, should we be electrifying Highway 401 and, instead of having petroleum-driven vehicles travelling the highway, have electric-driven vehicles? In many ways, there are fantastic amounts of heat that we waste from our nuclear plants—one nuclear plant would heat a whole city or perhaps more than a city.

In brief, do you have any thoughts that your emphasis on conservation is perhaps overshadowing the fact that, in the end, we may be using more electricity rather than less?

Hon. Mr. Wong: I think I would be guided by the principle of efficient, cost-effective, environmentally and socially acceptable alternatives. When you ask me about a specific case, I would have to weigh that against the alternative, but these would be the guiding thrust and principles upon which I think such decisions should be made.

Mr. McGuigan: My suggestion is that the alternative is often the least desirable alternative when you are looking at electricity versus burning fossil fuel. It has always been a concern of mine, but certainly the drought that we suffered here in Ontario this year and throughout North America really brings these things to the foreground. There is the possibility that it is caused by our own actions. That has not been proved yet, but certainly many people are questioning whether that is the case.

Mr. Chairman: On behalf of the committee, Mr. Wong, I would like to thank you for coming and giving us the benefit of your thoughts and answering our questions. Did you have any final comments you would like to make?

Hon. Mr. Wong: Thank you for the opportunity. As I indicated during my opening remarks, if I can be helpful in shedding any more light on any of the thoughts you come up with, I will be more than pleased to return.

1530

Mr. Chairman: The next witness we will be hearing from is Mr. Franklin, the chairman and president of Ontario Hydro. Perhaps I can give Mr. Franklin a couple of minutes to come forward. We will just wait for the shuffle to finish here.

Mr. Franklin, for the benefit of Hansard, please introduce yourself and those who are with you at the witness table.

Mr. Franklin: On my left is Lorne McConnell, vice-president of the corporate planning

branch. On my right is Dane B. MacCarthy, vice-president, energy management.

Mr. Chairman: For the members of the committee, I believe a copy of Mr. Franklin's remarks has already been handed out. It is the orange-fronted document. Mr. Franklin, perhaps I can turn the floor over to you.

ONTARIO HYDRO

Mr. Franklin: Four years ago, Ontario Hydro began a detailed and comprehensive study of this province's future electricity options. The purpose of the study was important and fundamental to Hydro's mandate. Its purpose was to sustain a reliable and economic supply of electricity into the 21st century for this province.

A year later, in September 1985, a predecessor of this committee held 16 days of public hearings on the need for Darlington. At the same time, the committee received presentations on the need for future planning, the scope of the options studied, and the important role that public consultation would play in future energy decision-making.

Two years ago, in April 1986, the same select committee reviewed the initial findings of Ontario Hydro's demand-supply options study. Today, four years after the start of the initial options study, we begin a phase in the process that will undoubtedly prove to be one of the most important public reviews of electricity planning ever conducted in Ontario and perhaps, for that matter, anywhere else.

Over the course of the next several days, Ontario Hydro will be presenting this committee with a series of briefings on the draft demand-supply planning strategy. I want to emphasize that this is a draft strategy. We expect it to undergo modifications and changes. We look to this committee for guidance and advice on how it can be improved.

The purpose of my remarks this afternoon is not to deal with the specifics of energy planning or to speak at length on the strategic principles identified in the draft strategy document. What I shall do is provide you with something which I hope will be helpful for your review of the draft demand/supply planning strategy.

I will share with you our view of how we see Ontario Hydro evolving as a corporation and the important changes that are taking place within Hydro. I will try to show how the draft strategy fits in with other initiatives under way by Hydro.

It is our hope that your committee will view the draft strategy with these other initiatives. They are all part of an overall program of change to help Hydro meet its challenges in 1990.

The draft strategy is certainly Hydro's suggested planning road map. Its review, development and implementation are the key to maintaining reliable, low-cost electricity in the province of tomorrow. But it is not a stand-alone document. It does not tell the whole story.

To fully understand our approach to future planning, I believe you should know of some of the attitudes and the values we hold as a corporation. There are significant changes taking place in the way we view ourselves and the way we conduct our business. This afternoon I would like to give you a brief look at Hydro's overall strategy of change for the 1990s.

In most industrialized nations, people have grown to expect electricity on demand. Ontarians are no different. There is little evidence to suggest these expectations will change in the decade ahead.

As a matter of fact, everything we now see indicates that people are expecting Hydro to do a lot more than provide a reliable supply of low-cost electricity. We will still be expected to provide electricity efficiently, reliably and safely for Ontario's nine million people and their industries. These are, and will always remain, the core expectations of Ontario Hydro, but they do not constitute the entire list of what electricity users expect.

There is a growing expectation that Hydro will do more; not more of the same, but different kinds of things. Customers are increasingly expecting Hydro to be more of an energy consultant. They are redefining their notion of what constitutes good service, and the value of that service means more than power at the switch. Our business customers expect us to appreciate a lot better the needs, pressures and challenges they face serving customers and competing in the marketplace, here or abroad. They want us to show them how they can use less electricity and still achieve their goals. They want us to develop better ways in which electricity can support and improve their operations.

It is a message I hear from many of our customers. It is coming from Ontario's large steel producers and automotive manufacturers, it is coming from the commercial and small business sectors and it is coming from Ontario's institutional sector as well. Sometimes the message is delivered rather bluntly. Customers remind me not to expect congratulations for doing what we are expected to do. We are not going to earn praise for continuing to supply the

basics—the reliable, low-cost power we have been supplying for years.

What customers want are the pluses—the information, research and advice, turning reliability and low cost to their competitive advantage. Institutional customers such as hospitals and schools are looking for the same things. Instead of a competitive advantage, they want a budget advantage. They want to control costs so that they can provide better care and service to the Ontario community. Customers want advice on how they can cut their electricity bills. They want to know how new electrical processes can help them produce higher-quality products, and they want us to help them improve productivity and eliminate waste.

The public at large expects Hydro to play a larger role in conservation and energy efficiency. It is a role we welcome, because the more efficient use of the power system is also one of our top priorities for the 1990s.

We have targeted for the year 2000, load reductions of 3,000 megawatts through financially induced efficiency improvements and load shifting. That is up from the 2,000 megawatts that was reported in the draft demand/supply planning strategy before you. The 3,000 megawatts is equivalent to the power produced by a large generating station. This will reduce the rate of growth and the need for new supply, and it will do so without in any way impairing Ontario's economic growth; in fact, just the opposite. We believe it will help sustain economic growth by improving our customers' economic efficiency.

As everyone is well aware, most regions of Ontario have been experiencing strong economic growth since the end of 1982. This growth has been great for the province as a whole, but it has also meant that electricity growth has been at the high end of the load forecast.

We recognize the uncertainty of future load growth, so our forecasting takes various growth scenarios into consideration. The demand during the past five years has been close to the upper limits of the forecast. Electricity demand has increased by an average of 4.5 per cent per year since 1983. This year, it is running even higher: closer to eight per cent.

By helping customers use electricity more efficiently, we hope to knock a per cent or so off the annual electricity growth and build more flexibility into our ability to meet Ontario's future power needs.

A lower load growth has another important benefit. It will help us meet the public expectation that we minimize the environmental impacts

of generating and transmitting electricity. So Hydro is looking for ways to pursue sustainable and sensible development choices in the decades ahead, choices which sustain both economic growth and the vitality and health of our environment. Balance will be a key priority.

We hope the draft demand/supply planning strategy will help us implement the kind of balance the people of Ontario are looking for.

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Hydro does not expect to have an easy time meeting all the various customer and public expectations. We are going to have to make changes in Hydro's organization and culture, retaining the things that have proven valuable in the past while infusing new attitudes and new values into our organization.

Hydro's past successes demanded a corporation that was determined, technically brilliant, system-oriented and capable of managing systematic growth. For the future, our orientation will have to add more flexibility, more openness and this broader definition of customer service. These are the values I want Hydro's business to be driven by in the 1990s.

To ensure that it is, we will have to take a new approach and a new direction in many areas of our business. We took several steps in implementing changes earlier this year. In March we restructured and streamlined the corporate organization, in April we approved a new corporate strategy for the 1990s and in May we announced that a major productivity review of Hydro would go forward.

The purpose of these initiatives was threefold: to create a Hydro that is more efficient, more responsive, and more open and in step with changing public expectations. What we really want to see in the 1990s is a Hydro that is more centred on its customers and more tuned in to their changing expectations.

The restructuring helps us achieve those objectives because it gives us a more dynamic organization. Customers' needs are going to continue to change in the 1990s. To meet them effectively, our organization cannot be weighed down by unnecessary reporting layers and procedures. The restructuring will help us become more flexible and adaptive to changing expectations over the long term.

The new corporate strategy for the 1990s attempts to instil within the mindset of everybody at Hydro that responding promptly and effectively to customers' needs is what we are in business for. We have to evolve so that Hydro's people see themselves more as customer servers

than as system builders. A streamlined corporate structure is a good thing, but without the impetus to use it, or the customer values to put it into action, it remains ineffective.

The third major plank in this strategy for change is the productivity review under way by the consulting firm of Cresap. It is designed to make sure that Hydro spends its time doing the right kind of work—the things that add value to the company's goals and activities—and that we do these things in the most efficient manner. The consultants told us, in their initial overview of Hydro's organization, that we have a strong culture, but it is not exactly the one we will need in the 1990s.

Large, successful corporations do not embrace cultural change eagerly. The productivity studies will help us identify the changes that are necessary and the best ways to achieve them. Productivity improvement and cultural change are at the centre of a new Ontario Hydro. We cannot allow ourselves to be caught in the midst of strong economic growth, or a downturn, without appropriate responses. Flexibility must therefore become Hydro's watchword for the 1990s and must span the entire breadth of Hydro's business, from customer service to the way we approach future planning.

This is where the draft demand/supply planning strategy fits. Future planning must meet all the traditional electricity needs in the 1990s and it must meet other emerging customer needs and public expectations as well. The options for helping us meet future needs include better information and incentives for energy efficiency, conservation, private sector small hydro and cogeneration projects and purchases.

These indicate that our future will not be driven by a single response to growth; that is, building more new generating facilities. The reality is that there are diverse options and many of them make a lot of sense in terms of the customer orientation, the flexibility and the openness we want to achieve in the future.

Our task over the next decade will be to have in place programs and facilities that achieve tangible and significant energy savings. It will also be to sensibly develop additional supply resources. Our choices must be environmentally sound, technically reliable and financially feasible.

The draft strategy will help us make those decisions because it will serve as the basis for the development of our actual plans.

The strategy is just that: a strategy for future development. It is not a definitive plan specifying options and need dates. It is instead a set of

guidelines to provide consistency in future planning. Over the next number of days, our planners will be outlining the choices facing the province.

It will be important that we proceed with making these planning decisions because sustaining a reliable, economic supply of electricity for the province will be key to its progress and growth over the next few decades.

So what does the draft strategy tell us about meeting planning challenges into the 21st century?

For a start, the strategy document tells us that we are likely to need about 8,000 megawatts of new dependable demand or supply resources by 2010, assuming the median load forecast. We may need more or we may need less.

During the past five years, load growth has been running a point or two above the median forecast, and in a province the size of Ontario, a point or two is no small matter. Since 1983, for instance, the demand for electricity has already increased by more than Darlington will produce when it is fully completed.

If the demand growth slows down to the median forecast, that is, 2.6 per cent per year between now and the year 2000, Ontario will have enough power with its existing capacity until about 1995 or 1996.

If we are to meet electricity needs post-1996, we must get on with making the important decisions now about both new demand and new supply options. Why now? Why both demand and supply?

Because flexibility and diversity are key to Ontario's electricity supply in the 1990s and the first decade of the next century. If we move now, we will have the time to develop balanced plans; plans that meet Ontarians' expectations and needs.

At the median growth pace, we believe we can serve the province to the turn of the century by focusing our attention on the areas I mentioned earlier: demand management, energy efficiency, small hydro, parallel and cogeneration, and perhaps purchases.

However, 1996 will be far too late to start thinking about new supply options even though the demand management, energy efficiency and parallel generation programs deliver the megawatts we think they can.

We may end up getting more from them and they might carry us well beyond 1996. But they also might fall short, or the load growth may not track the median forecast. So we should ensure flexibility to cover such possibilities. We should

be in a state of readiness so that implementation of our supply plans can be timed for when they are needed.

The draft strategy is markedly different from Hydro's planning in the past because it recognizes that the electricity needs of this province should be met from an array of options, both demand and supply, each option having its place according to the values it brings to meeting those needs.

The draft strategy also tells us that load growth will not be our only challenge. Much of the province's existing generating facilities will be approaching the end of their normal operating lifespan, so we will also be thinking about the need to refurbish them or replace them with new demand or supply options.

Between now and the year 2010, as much as 12,000 megawatts of our fossil generating resources will need to be refurbished or replaced. It will not be a small project, because it means we will be looking to refurbish or replace 37 per cent of our existing and committed generating capacity.

The draft strategy also says our transmission system will need to be expanded and improved. Even more than generation, it is key to maintaining future reliability.

Add the environmental challenges and all the other public expectations into the mix and you get a good idea of the scope of the issues the draft strategy will help us come to terms with.

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The draft demand/supply planning strategy recognizes the importance of making tradeoffs. It examines the pros and cons of the entire spectrum of options we can turn to in the future. It examines them in terms of their public acceptability, reliability, flexibility, potential, cost, environmental impact, what they will mean for rates, their impact on the economy, etc.

It lays our choices and alternatives before us. In effect, it says there are many solutions and mixes of solutions, but none of them are simple. Whatever course of development we eventually take, we need to make some important decisions now. We feel the review of the draft demand/supply planning strategy that will take place before this committee should not be the only opportunity for the public to express its views on the future. We envisage and we seek wide public consultation at every step of the way as we proceed into the 1990s.

I want to conclude my remarks by saying that the draft strategy and the other initiatives we are pursuing are designed to put this company,

Ontario Hydro, entirely in step with the province and the people's changing needs and expectations. As Mr. Wong has said, we are working together to achieve these goals.

We at Ontario Hydro are attempting to make some significant changes in both the way we view ourselves and the way we conduct our business. We want to become more open to change. We want to become more flexible. We want to focus our complete attention on our customers and their needs. We want to protect the environment. We want to develop effective demand-management and energy-efficiency programs, and we want to do it while we continue to sustain a reliable and economic supply of electricity for Ontario into the next century.

Mr. Chairman: Thank you, Mr. Franklin. We now have some 30 or 40 minutes during which Mr. Franklin has agreed to entertain questions. I hope, as in the past round, everybody will keep in mind the limits on the questioning. Mr. Cureatz, you are first on the list.

Mr. Cureatz: Thank you. Committee members, I will be brief and allow ample time for questioning. Are we going to 4:30 p.m., Mr. Chairman?

Mr. Chairman: I think we will, if it is agreeable to the committee.

Mr. Cureatz: I thank Mr. Franklin for coming before the committee. I can tell other committee members of the co-operation I have had from Mr. Franklin, especially vis-à-vis the Darlington generating station, and I am most appreciative of the correspondence we have had from time to time.

In regard to some specific questions, my first is all-encompassing. I am wondering if you have formulated in your mind, in terms of directions for Ontario Hydro—as you so interestingly put it, the “company”—the relationship you see developing between Hydro and the government, and I guess more particularly the Minister of Energy. From time to time, I think it has been confusing where those lines are.

I think we have had from the Minister of Energy this afternoon a clear indication of the options available. Hydraulic power seems to be high on the list. I wonder what those kinds of concerns reflect to you in terms of your position and to other top management people when they are evaluating the demand-supply option strategy for the next 20 years.

Mr. Franklin: The relationship between Ontario Hydro and the government, of course,

eventually will be reflected in whatever changes may come to the Power Corporation Act. The relationship, I believe, should be one where the government sets the energy policy for the province, and the energy policy for Ontario Hydro and how it fits into that total provincial energy policy. It should be Ontario Hydro's responsibility to make sure it delivers an effective electricity system within that policy framework.

It is not unlike the role of the Minister of the Environment who establishes certain environmental standards that he expects Ontario Hydro to live within. It leaves up to Ontario Hydro how it is going to achieve those standards that have been set for us. That is the relationship I see the government having vis-à-vis Ontario Hydro.

With regard to Mr. Wong's favouritism towards conservation, small hydraulic and cogeneration, I believe our role is quite simply that we should take the most economic course we can as a corporation. Many of the conservation measures we talk about are the first economic priorities. Many of the small hydraulics and improving the efficiency of the existing hydraulic we have are the most efficient ways of meeting the electricity needs in the future.

But whatever the government sets out as a policy direction for Ontario Hydro, I think we should be free and also determined to live within it.

Mr. Cureatz: With your opening comments in answering my question, in terms of opening the door and windows to Ontario Hydro as to how you think you see the role of the company vis-à-vis the government, I want to centre on a comment you made about cogeneration. I mentioned to the minister the garbage crisis that appears to be happening in southern Ontario and more particularly, as I indicated, Metro Toronto looking for dump sites in Scarborough and my riding of Durham East, in the town of Newcastle.

Do you think we are too far committed now to landfill sites as opposed to Ontario Hydro cranking up a whole system of going into cogeneration? By the time we seek a cogeneration option, we are talking about five or 10 years, and it may not be worth while for Ontario Hydro to pursue that line of approach.

Mr. Franklin: I mentioned earlier how we had increased our targets for conservation to 1,000 megawatts for incentive-driven conservation measures. On the cogeneration side, the DSPS referred to some 330 megawatts of parallel generation including cogeneration. We have tripled that. We now think we could get as much

as 1,000 megawatts and a large portion of that is cogeneration; cogeneration regarding things like the pulp and paper industry, which is creating steam anyway, and it can be first used to generate electricity.

With regard to the use of garbage, it is not environmentally benign. There is a great deal of environmental impact in the burning of garbage. Frankly, I do not believe we at Ontario Hydro know a great deal about burning garbage for electricity. It is an area we could indeed pursue, but to me there are more environmentally sound and cheaper ways of meeting the electricity needs of this province before we turn to burning garbage.

Mr. Cureatz: I would like your response to the idea that any change of direction would have to come from the Power Corporation Act. Of course, the minister has indicated amendments to the act are being brought forward.

Two areas of questioning: First, under the Power Corporation Act, would you be receptive to the idea that Ontario Hydro should re-examine its policy of a grant in lieu of taxes to municipalities, particularly those municipalities that have a nuclear generating station, such as Pickering, Kincardine and, of course, the town of Newcastle?

When you compare the amount the generating stations in the United States have to pay for a tax—if I recall, I think Ontario Hydro's grant in lieu of tax for the town of Newcastle is \$500,000—a comparable amount in the United States for the same size of generating station is \$10 million. I am certainly not proposing that Ontario should be writing a cheque right away for \$10 million, but I am suggesting that there might be a re-evaluation, taking into consideration that those municipalities which become hosts to nuclear stations have the burden of a large facility of that nature.

I know some reports have been recently brought forward, within the last month, reported I guess in the Toronto Star, about health hazards in relation to living close to nuclear stations. I still feel comfortable that nuclear power in Ontario is safe and I commend Ontario Hydro for progressing along that area of development, but by the same token, would there be some consideration for review of grants in lieu of taxes?

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Mr. Franklin: In my understanding, Mr. Cureatz, the grants in lieu of taxes are just another way of saying municipal taxes. They are calculated exactly the same way. They create the

same result. I do not think there is any difference between the way we would pay municipal taxes as opposed to the grants in lieu of taxes. I think they are exactly the same.

Compared to the situation in the United States, I am really not familiar with that, except to suggest that in addition to the grants in lieu of taxes, Ontario Hydro does have impact grants that it makes available to various communities in which its operations have a sudden or large change of magnitude. I really cannot help you much beyond that, except to say that I think we are paying our way now.

Mr. Cureatz: One further question, on the Power Corporation Act amendments: as you well know, I have had correspondence with you and a letter from you dated July 21, 1988, about a concern in my riding of the possibility of boundary changes of municipal hydro facilities, more particularly in the Courtice area, which is adjacent to the city of Oshawa. You have indicated that a Gord Sanford is the central region director, whom I would like to have a meeting with and still pursue this.

Would Ontario Hydro generally be more receptive to such boundary changes? My understanding is that under the present act, it is quite strict in terms of the manner in which boundaries can be changed. I will not go into detail—it would take up the committee's time—but would you be more receptive?

Second, totally off topic, do you feel there is any kind of conflict with your continuation as chairman and president of Ontario Hydro? Would you feel there would be a point in time in the near future in which those two positions should once again be severed, or should they remain the same?

Mr. Franklin: On the first question about the boundary changes, I am really not an expert on that. I do know Mr. Sanford is going to meet with you and examine the situation with regard to the specifics you have in mind.

With regard to the dual position of chairman and president, I do not think there was ever a conscious decision by the government that it would combine those two positions at all. It happens I am serving in both now, but I do not think that was meant to be for all time. I honestly believe there will be, in the not-too-distant future, a chairman and a president and they will be two different people.

Mrs. Grier: I was just thinking and said to Mr. Cureatz that maybe he would be appointed, Mr. Chairman.

Mr. Chairman: I do not know that I have any control over that.

Mrs. Grier: Throughout your presentation, Mr. Franklin, I was struck by the emphasis on customer satisfaction. You have seen your mandate as serving the users of electricity or the customers. I cannot recall the details of discussion we had at the last select committee about the mission of Hydro, as a public corporation, to serve the public of the province as opposed to the ratepayers, but I am wondering if your emphasis on customer satisfaction and the cost to the customer represents any different approach from Hydro, or is that a continuation of the same?

Mr. Franklin: It may have a change in emphasis. I think Ontario Hydro always had its customers' interests at heart. What I see, though, is a change in what our customers are expecting of us.

At one time they expected that if we just brought the power to the site of the industry or the plant reliably, safely and cheaply, that was enough. I do not see that now. Customers are telling me that they want us to be able to give them some advice on how to use that product wisely: how to use less of it when it is in the customer's interest, not when it is in Hydro's interest, and when they can use it in new applications when it is in the customer's interest, not in Ontario Hydro's interest.

The problem I had with our corporate strategy was that it was founded in a time, 1982 and 1983, when the demand was going down and we had lots of capacity and we thought it was in the customer's interest if we—you will excuse the vernacular—flogged electricity to keep the unit rate low. We did that, but I believe we should be doing things that are in the best interests of our customers and not in the best interests of Ontario Hydro.

Mrs. Grier: I am sorry. Can you just explain that distinction in that sentence?

Mr. Franklin: We had this view that if we promoted electricity in 1983-84, and therefore used up some of this capacity, that was in the customer's overall interest. The fact that perhaps the customer's bill went up when there were more efficient ways of serving that customer's needs, I think, was not appreciated as much as it should have been. I can give you an example. There are times when we are seen to be promoting the use of electricity for heating. Some of our customers value that, but I think we have an obligation to those customers to explain to them not only the benefits, but the disadvantages and the cost of doing that.

While it may at one time have seemed to have been in Ontario Hydro's interest to get more people using electricity, I do not think that is what our customers expect. Our customers expect us to tell them how to use it wisely, as little of it as possible, and, where we can tell them how to use it in new ways, to do that too.

We had as one of our corporate goals to increase our market share to 20 per cent. To me, that seems to be a goal that is Ontario Hydro-centred. What we should be doing is serving the diverse needs of our customers, and whatever the market share happens to be, that is what it will be. It will be that way because it naturally falls out that way and not because we are promoting the use of electricity for the goal itself of creating market share.

Mrs. Grier: The minister talked about his expected timetable for review of the DSPS. I am wondering what your comments would be on that and if perhaps you could give the committee an outline of the process you expect to follow when this committee has completed its deliberations and made recommendations.

Mr. Franklin: As I understand the timetable that has been set for all of us, this committee will have its report available by the end of the year. Then Ontario Hydro will be given until May or June of next year to translate that and the government's views on it into a definitive plan and to release it for public review by the middle of next year. We are very eager to do that. As I said in my remarks, while we have time to make these decisions, we do not have time to waste. If we are going to have the best plan, we do not want to be hurried into doing it. We want to do it at an intelligent pace.

What we expect to do is receive that advice, receive the government's direction with regard to energy policy in the province and return as quickly as we can with a definitive plan. I suspect it will not be a single plan. There may be a preferred plan, as seen through the eyes of Ontario Hydro, but I suspect there will be alternatives as well so that a judgement can be made on the various options that are before us.

Mrs. Grier: If I have time for one more, I would be very interested in Mr. Franklin's comments on the recommendation that there be an independent expert examination of Hydro's cost estimates for Candu reactors. Some of us have felt that underestimation of the cost of nuclear power has, in the past, somewhat skewed Ontario Hydro's planning. I do not expect you necessarily to agree with that, but perhaps you could tell us how quickly you see that kind of

independent examination of the cost estimates occurring and how you would see it occurring.

Mr. Franklin: Ontario Hydro certainly does not resist, in any way, that recommendation. As a matter of fact, about two months ago, I asked for the same thing internally. I asked for an external review of the costing of our nuclear program.

You must realize that I have no emotional attachment to any kind of technology. I want the best technology, and I want the one we choose to be founded on as accurate an estimate and description of the benefits and the disadvantages of it as possible. I can hardly object to it, because I triggered one myself. Now, it will not be necessary to do two, and I think, frankly, it will have better credibility if it is done by someone else. I welcome the idea.

The only concern I have is that while it may appear to be the cheapest at the moment, and while we take a hard look at it to make sure it is, I wonder whether we should not be taking a hard look at the economics of the alternatives as well; at least the coal option, which seems to be the one that is also vying for supremacy in all of this.

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As you know, the technology for coal is changing rapidly. We will never build another coal generating station of the kind we have. There is probably, in my mind, as much uncertainty about the economics of coal as there is about nuclear. I am not quite sure why we would stop with just the one. It was not my recommendation. My answer to you is we have not resisted at all; we welcome it.

Mrs. Grier: Can I try then just to expand that slightly? Do you see that kind of a review of the economics of coal occurring, and have you initiated an independent examination of the costs of nuclear?

Mr. Franklin: No. What I did was I asked Mr. McConnell on my left here to come back to me as soon as he could with recommendations on how this could be done externally and without too much Hydro involvement, because I wanted the credibility that whatever those numbers came out at would give us. Events overtook us, and before we could launch it, the minister made his remarks here today. I do not think it is necessary to do two; I think one is sufficient.

Mr. Runciman: Mr. Franklin, I just want to pursue briefly something I talked to the minister about, and that is I am curious about the change from the demand-supply options study to the demand/supply planning study and when that

title change took place and what was the reasoning behind it.

Mr. Franklin: I do not think there was anything sinister about it at all, Mr. Runciman. It was known as the demand-supply options study while it was in the phase we were in, which you refer to, and that is a setting out of the various options for initial screening, so it was properly characterized as the options study.

The phase we are into now is one getting closer to the definitive plan. Before we proceeded with that definitive plan, we thought it important that we get a meeting of the minds on the principles by which it should be constructed. Therefore, for no other reason than that that I am aware of, and my friend on my left here can correct me if I am wrong, we have changed this phase of it to read the demand/supply planning strategy.

Mr. Runciman: Then, the story that appeared in the *Globe and Mail* in September 1987, that the report recommended the province would need another multibillion-dollar nuclear power plant by the year 2002, was incorrect?

Mr. Franklin: No, I am not aware of that.

Mr. Runciman: All right.

Mr. Franklin: Excuse me, Mr. Runciman. I will just ask my colleague here, because he has been involved in it more intimately than I have, if my answer was full.

Mr. McConnell: With regard to the demand-supply options study, we have not changed the name. It was the demand-supply options study; it is the demand-supply options study. The demand/supply planning strategy is the third phase of that study. It is a part of the whole.

Mr. Runciman: We have all of that material before us?

Mr. McConnell: Yes.

Mr. Runciman: Mrs. Grier asked you about whether you agreed with the timing the minister suggested, a range of 18 to 24 months. We are talking, at the outside, of two years before some decision takes place. Do you think that is reasonable?

Mr. Franklin: If it is the best we can do, it is the best we can do. As far as I am concerned, the sooner we make these choices, the better off we will be because then we will be able to produce this plan at not such a hurried pace. We hope to have that plan before the minister by the middle of next year.

What I do think is necessary is that we take enough time to make sure there is public consultation about that definitive plan, because it

will not help Ontario Hydro any if it is a plan which is not bought into by the people of the province.

Mr. Runciman: Do you agree with the minister as well that the free trade agreement projections the corporation has made in respect to its impact on demand do not have any significant impact on the DSPS?

Mr. Franklin: I think our analysis of the free trade agreement said we would probably experience perhaps 11 years' growth in 10. To that extent, since we plan forward on a broad range of forecasts, not on a single forecast, I think the range we have adopted can accommodate swings of that nature.

Mr. Runciman: One of the things, in respect to the major assumptions in the forecast—and this has been mentioned by one of my colleagues—is that the price of electricity will decline in real terms. The rate increase is generally less than inflation. I am not sure why the planners have made that assumption. I am curious about it. Is that realistic? I am taking into consideration your debt of at least \$25 billion. Is that a realistic assumption to be making and, if so, why?

Mr. Franklin: I think it is a valid assumption, but it is going to be very difficult to achieve. The costs of both demand management and new supply are, at best, estimates. I suspect that the environmental costs are going to increase. Other costs associated with meeting the expectations I have described are going to increase. I think we will be fortunate, frankly, if we can keep the costs to no real increase over that period of time.

Mr. Runciman: When you make that assumption, though, are you taking into consideration any effort whatsoever to, if not eliminate, significantly reduce your debt?

Mr. Franklin: We will be repaying our debt as we go along, as you know.

Mr. Runciman: I do not know that. I have been advised you do not have any debt repayment plan.

Mr. Franklin: We are required by statute to have a repayment plan. We must make provision for a statutory debt requirement every year.

Mr. Runciman: So you have a plan to eliminate your debt?

Mr. Franklin: We have a plan to retire debt as it comes due. In an organization like ours, in a province like ours where the demands are going to continue, I do not expect our total debt to go down. It is a very large debt, I agree with you, \$25 billion, and we do not take it lightly.

But you have to look at it in the light of the assets which it has been used to purchase. We have some \$34 billion worth of assets. Even that is like comparing the mortgage on your house to what you paid for your house. Most of us do not do that; we compare it to what it is worth. The replacement value of our assets is closer to \$50 billion.

While it is a large debt, and no doubt will grow as the assets or the programs of demand management grow, I do not think it is unreasonable for a corporation of our size and our obligations. In fact, it is not out of line with the debt ratio of other utilities in Canada.

Mr. Runciman: Is it true that about 50 per cent of your revenues go towards financing your debt?

Mr. Franklin: That is about right, yes.

Mr. Runciman: I have some real problem with your approach to the debt. I brought forward the matter of the increased value of the Canadian dollar and got the argument, "Well, we do not know what is going to happen over the course of the year."

But if, in effect, the Canadian dollar stays at its current value, you are going to see what I described as a windfall. I felt that that should perhaps be applied towards a significant reduction of the debt. Savings to Ontario consumers over a 20-year period are in the billions of dollars, as you know.

Mr. Franklin: Let there be no mistake about that: To the extent that our profits are higher than we would otherwise expect, the total amount will be applied to reducing the amount of borrowing that we are undertaking.

Mr. Runciman: You have said in your statement here that fossil-generating resources need to be refurbished or replaced. I know that the steering committee talked about things like the decommissioning of nuclear generating stations. When do you see yourself facing the need to decommission a station?

Mr. Franklin: The lifetime expectation now of a nuclear station is 40 years. I cannot tell you when the first one went into operation. Perhaps I should be able to, but Mr. McConnell will know.

Mr. McConnell: Forty years for the first nuclear station is the year 2011.

Mr. Runciman: What is the cost in today's dollars of decommissioning a station?

Mr. Franklin: I cannot tell you the amount. We are making provision for it in accordance with the best estimates. It is already included in the cost of our power to our customers.

Mr. Runciman: So you have established some sort of a fund to meet that inevitability?

Mr. Franklin: We have not established a fund. We have established an obligation and a liability for it.

Mr. Runciman: I have been asked to wrap up. I have a number of other areas. I hope we will have an opportunity later on.

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Mr. McGuigan: Mr. Franklin, I am very excited and very pleased by your statement on the general flexibility of your plans as compared to the past. I wonder how flexible you really are. You mentioned, in answer to a question I think Mr. Cureatz had, that your obligation in the past was to bring Hydro to the road past a business or a residence or whatever.

I think you know, if you were listening when I was questioning the minister, that my basic position is that we should be using more hydro and less of the alternatives, because I think the alternatives are more damaging to our environment than is hydro.

But I would submit that your plans in the past have discouraged the use of hydro in many instances, speaking of commercial applications. This is certainly brought to bear in my own personal case. My son and I operate a farm and, in the droughts of the last two years, we have had to increase our irrigation system. We were always in the irrigation business, but certainly in the last two years, instead of irrigation being supplemental, as one looks upon it in our climate, we have been forced to grow the crop entirely with irrigation, particularly this year. We have not had any rain in Kent and Essex counties, except some scattered showers which all missed our farm. We have not had any rain since May. So we have about \$500,000 worth of crop out there and we have just spent about \$50,000 extending our irrigation system.

When we approach an oil company or a propane company, they will put a tank right alongside our motor and deliver the gas to us right on our property, fill our tank up. If we do not pay them this month for the fuel, they deliver next month and they deliver again the next month. Going back to times past, I have even made them wait a year for their money. But when we approach Ontario Hydro, it says, "We're not interested unless you can put up \$15,000 or \$20,000, and you've got to pay in 30 days or we'll turn your hydro off."

So I wonder how much flexibility you have, because this has been brought to my attention not only by my own case, but also by many cases in

which constituents have approached me. They have a proposition; they want power at a certain place, at a time when they have extended their credit to the very limit. They have spent every last dollar they have. They have mortgaged their house, they have mortgaged their future to go in with some new enterprise requiring power, and Hydro says, "That's fine, but we won't risk one cent of Ontario government money."

Do you extend your flexibility to taking a few risks, to examining this policy of perhaps investing some of your money in lines and so on to supply the customers? Certainly your competitors are only too glad to go in there and provide the facilities. You end up with perhaps the worst, in my view, source of energy you can have.

Just going back to my own case and talking about a 100-horsepower electric motor, if that is successful, that is a big new market for you. It would seem you could risk a penny or two to facilitate the use of that power. It has not been the case in the past. I wonder if you would comment.

Mr. Franklin: First, as I said earlier, I think we have an obligation to do what is right for our customer, not what is right for Ontario Hydro. I believe that is two-sided. Where electricity is not the best form of energy, we should be frank with our customers and tell them so. Where it is, I think we should be frank enough to tell them that too.

I know about water levels a little bit, not quite so directly as you do, but I know that the lack of rain in the north is causing us to have to burn more coal to replace that.

Mr. McGuigan: Perhaps I should tell you that I was chairman of the committee that studied water levels, so I got into that too.

Mr. Franklin: I am very conscious that where it is in our customers' interests to promote the use of electricity—and I do not know whether it is in your case; I do not know whether propane is more attractive or less expensive than electricity—then we should be promoting it.

If we are going to do that, if it were, for instance, cheaper to use electricity than to use propane, then I think we should be giving you incentives to use energy-efficient motors to do that job. To the extent that that would require some kind of energy efficiency incentive, then it would fall into our program, but I do not think we should be the substitute for a bank to promote the use of electricity when it is not the cheapest form of energy for a customer.

Mr. McGuigan: I was not expecting you to go the route of the bank, but I just lay out the

difference between your approach and an oil company's approach.

Mr. Franklin: The oil company is interested in market share. They are going to talk you into using oil, gas or propane so they can sell more of their product. That is what they want to do, sell more of their product. I am not really interested in selling more of my product. I am only interested in making sure that I sell what is in your interest and not in mine.

Mr. McGuigan: The thing in my case that burns me up is that a big, high-powered system runs right by the road. There are unlimited amounts of power there. To get it back into my farm where my irrigation pump is, or my son's irrigation pump is, takes a lot of capital and takes it at a time when we do not have any.

Mr. Franklin: I know what you mean.

Mr. McGuigan: I take it you are looking at some of those things a little differently than you were in the past.

Mr. Franklin: I think we are looking at our obligations to our customers quite differently now than we did in the past, with, as I said earlier, not a 180-degree turn, but more emphasis on satisfying customer needs.

Mr. McGuigan: There are a lot of people out there, I can tell you, who will be watching you—it will be very interesting—and waiting hopefully for some slight changes in policy.

Mr. Charlton: Mr. Franklin, your presentation today intrigues me. This is the first time I can recall Hydro coming before a select committee of this Legislature, or any committee of this Legislature for that matter, expressing a need to change and a hope that you are able to. It seems to me that in past incarnations we have had Hydro coming before committees here saying, "We welcome this review because it gives us the opportunity to demonstrate how thoroughly we have looked at everything and how right we are." So your approach today intrigues me.

On the other hand, the need to change is being expressed by you, and you have stated some of your hopes and those things you think should happen. You have also set out one of the major problems that confronts Hydro in the context of its ability to change. Right in the middle of your presentation, you set out what is essentially the classic corporate nightmare: large, successful corporations are loath to change.

I think it would be fair to say that the past select committees have played some small role, and probably smaller than we would like to admit, in starting some of the changes. You seem to have

expressed a sincere desire to see Hydro change fairly dramatically in terms of fitting into the future. Perhaps you can make some suggestions to us in terms of the work we are doing this year about how we could—just to pick up on an expression you used in responding to Mr. Runciman, when you said your view of the impact of the free trade agreement would be to cause 11 years of growth to occur in 10, what can we do as a committee perhaps to ensure that we see about 10 years of changes in Hydro occur in the next 18 months?

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Mr. Franklin: First of all, I do not think this is the first change Ontario Hydro has gone through in its 80 years of history. It has been a corporation which has constantly changed. It had to change, perhaps not in the kind of way I am talking about. It had to change its knowledge, experience and capability in different technical ways. At one time we were simply a hydraulic company, then we had to change and learn thermal and then we had to change and learn nuclear. I think Ontario Hydro changed in the way that the society of the day expected it to change. I am saying the society of today expects us to change again. It is just not my plan and it is just not my board of directors' plan; it is that of the senior officers of Ontario Hydro and many, many of the managers within it. I believe we are going to get a full commitment to making these changes.

Ten years in 18 months? I would be delighted to see that. Cultural change, as you know, takes a long time. It takes a determination to see it through. It takes communication. It is making sure our employees from top to bottom are prepared to take more responsibility for their own actions, to rely less on committees and less on layers of management. It is to ensure they have a clear understanding of the goals and objectives. It is my responsibility and that of my senior officers to set those out.

Contrary to what you might think, I think we can achieve this change because we have succeeded in the past and I believe we will succeed in the future. I have great respect for people employed at Ontario Hydro. I believe there is virtually nothing they cannot do if they set their minds to doing it. It is my responsibility to make sure they understand what the corporation expects of them and what society expects of them. I have no doubt whatsoever of their loyalty, determination or ability to do that once the path ahead is clear for them.

Mr. Charlton: I hear what you are saying, but I have to be frank with you. I said I was intrigued

and I am also pleased to see Hydro openly talking about change, but let's face it, there have been changes in the past. There is no question about that. We have gone through hydraulic, coal and nuclear. Those were changes, but they were not basic, fundamental changes in the way in which Hydro operates. You had to look at new technologies because for one reason or another the old technologies were no longer suitable or available, and that is all understandable. But we are talking here about some very basic, fundamental changes—you mentioned it a few times in your presentation—changes in attitude and changes in the way you as a corporation view your job. I am not talking about individuals necessarily, although all of that will result in changes in the way individuals within Hydro operate as well.

The change in attitude is probably the most important one to talk about, but there is also the whole range of changes that is implied in the things you have said in your presentation, where you talked about customers seeking advice on efficiency and so on. For example, what would it mean for Hydro if over the course of the next 18 months we found that instead of 3,000 or 4,000 megawatts of demand-side options being achievable by 2010, there were 10,000 megawatts of demand-side options available in the planning frame period we are looking at? What would that mean in terms of the Hydro that is currently trying to change? Would your corporation be able to shift gears quickly enough to attain that 10,000 megawatts of demand-side options or is that realistic even if they are really out there?

Mr. Franklin: I guess the proof of the pudding is in the eating of it. If there were such economic conservation measures, then I think we would pursue them. We have set a target of 5,500 through conservation, cogeneration and other ways. That is about 25 per cent of the existing electricity use. That is at the outer limit of what the outside consultants to the Minister of Energy set as a potential. It is not the minimum; it is the maximum. It also relates to something like eight or 10 per cent, which has not been achieved in other jurisdictions.

We have already set some very ambitious targets, much larger than they were in the DSPS, but now quite large in both targets and what other people have managed to do. We are going to pursue those. If there happen to be 6,000 or 7,000, we are going to pursue that too. We are not going to stop at 5,500. We are going to pursue that to the extent that they are economic and of better value to our customers than other options.

Can we make the changes as quickly as you think is necessary? I believe we can. If I did not believe so, I guess I would have trouble with making the statements I have made here today. Despite what you may think, the people in Ontario Hydro want to do what is most economic for the province in the supply of energy. Perhaps we were not as sensitive to some of society's interests and concerns in the past. I do not know about the past. I only know about the future and the present. To the extent that there are 5,000, 6,000 or 7,000 megawatts of economic conservation or economic alternatives to supply, we are going to pursue them.

I need your help, quite frankly. Ontario Hydro needs your help, and that is why we are here. We are sincerely interested in getting your opinions about the principles we have enunciated here. We expect them to be changed and we expect them to be modified, but in the end we want to have a set which everybody or nearly everybody in society can adopt because it will make the future so much easier for us.

We are now going in a direction that everybody or virtually everybody is in support of. If we continue to have a set of objectives with which a large segment of society is uneasy, then our job is going to be that much more difficult. It is difficult enough as it is. I do need to make it more difficult by not having a set of principles that people are generally going to adopt.

Mrs. Sullivan: Mr. Franklin, I have been very interested in your remarks today. I have had several conversations with industry presidents, plant managers and so on in my own riding who have already taken advantage of some of the expertise at Ontario Hydro to rework their own electricity use planning, and they found that very useful. I do business forums in my riding and I have been asked if I would sponsor a specific forum with Hydro involved on that matter because already there have been significant cost savings and great efficiencies.

Mr. Charlton was speaking about change. I suppose, to a certain extent, the more things change, the more they remain the same. As we see industry changing and even remaining the same in our natural resources industries and major manufacturing companies such as the steel industry, we see that one of the things that is of key, absolute vital importance is an uninterrupted supply of electricity. Similarly, as many of our industries are becoming more technologically sophisticated and using advanced computerized equipment, the consistency of uninterrupted supply is also vital to them.

One of the things that seems clear from your discussion today, as well as from other documentation we have received, is that even with conservation efficiencies, with parallel generation and so on, new methods being introduced and new innovations, there is still going to be a demand that will outstrip the efficiencies and savings made through other techniques. One of the things I do not understand, frankly, is what is happening to that power system planning while this strategic exercise is going on?

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Mr. Franklin: First, I am pleased that we have been helpful to some of the industries in your constituency. That is something we have been trying to accomplish in the last little while. I agree with you that the surveys we have done indicate that customers value reliability before they do everything else, particularly our industrial and commercial customers. It stands before price; it stands before virtually everything. Reliability is absolutely essential.

When you think about a momentary reduction in voltage or a few-second outage and the impact it can have on some of the industrial processes, I do not think any of us understand really how valuable that is. If there is one single thing that comes through to me more often than anything else when I talk to our customers, it is this concern about reliability. One of the things we have going in this province is a far more reliable system than we have in some of our neighbouring provinces. The price may be a little higher here, but it is outweighed by the reliability we are able to achieve.

I should tell you that reliability and its future reliability do concern me because our plant is ageing and it is going to cost considerable sums of money to keep that reliability up. What is happening in the mean time? There is a great deal of activity going on in the demand-management side, and since your comments were related to supply, I will not discuss those now. But we are proceeding with some tentative plans in the field of hydraulics. We have some environmental assessment documents under way for hydraulic stations in northern Ontario and we are hoping to proceed soon with an application for the upgrading of Niagara.

We are continuing to keep abreast of other supply options, but we are not doing any engineering or design of future plants because we do not want to waste money. We want to make sure we have the direction of this committee and of the government before we proceed. That is why it is beginning to give a little bit of concern

about the timing of this thing. Of course, we are completing Darlington, which is a major supply option. The first unit will be coming on line next year.

That is all we are doing on the supply side that I can recall. Mr. McConnell, you are in corporate planning. Do you have anything to add to that?

Mr. McConnell: That essentially covers it with regard to hydraulic. These interim plans that are being prepared for northern Ontario—Little Jackfish and Mattagami—and Niagara constitute approximately 1,000 megawatts. Those have not been approved. They are submitted for approval, but they are in the early stages of preparation.

Mrs. Sullivan: On a totally different aspect, if Hydro becomes more involved with purchasing power from independent generators and so on, where would the setting of technical standards lie? Would that be with Hydro in terms of the kinds of processes that would be used for generating electricity?

Mr. Franklin: The standards for connecting to our electricity system would be established by Hydro. It is a very delicate operation to connect to the bulk electricity system and we would want to ensure the protection of that system against private generators. Yes, the connection to the electricity system would remain with Ontario Hydro.

Mrs. Sullivan: Last, does Hydro share the predilections of the Minister of Energy in relationship to the supply options that he outlined earlier? He suggested hydraulic renewable and then perhaps cogeneration after that.

Mr. Franklin: We certainly want to pursue all of the economic parallel generation, cogeneration and small hydraulic generation that there is by the private sector. We are interested in pursuing the conservation side, because I see that as a response to demand. There are some hydraulic stations left in the province which are economic and we should get on with those. I think that my list is not unlike that of the Minister of Energy.

Mrs. Sullivan: Thank you.

Mr. Chairman: The time is getting on, but I think some members might have some supplementary questions. Mr. Runciman, you have indicated you had one more.

Mr. Runciman: It is more of a request than a question. I am sure that Mr. Franklin would agree that the committee should have as complete information as possible in making its recommendations. The DSPS did not assess the economics of major purchases from Manitoba and Quebec, I

think he said because negotiations are still continuing. I am wondering, certainly at some point during our deliberations, whether we could be provided with a full assessment of the economics of such purchases, and if negotiations are still going on, whether we could have some sort of a preliminary assessment. I think it would be very helpful to the committee.

Mr. Franklin: The negotiations are still going on. It is kind of a moving target, as negotiations usually are. To be honest, I am reluctant to negotiate power purchases in public, because I do not think that is the best way of concluding the negotiations. I can tell you that the last proposal I saw had the cost of purchases from Hydro-Québec at a very large difference between our estimate of nuclear, coal, oil or any of those options—substantially higher.

I do know that those negotiations are going on. For all I know, the negotiators at the table have narrowed that gap. I think we have to bear in mind that Hydro-Québec and Manitoba Hydro have customers in the south directly below our border, where the energy rates are two and three times higher than they are in Ontario, who are prepared to pay very high sums of money for these contracts. What is fair in the United States is really quite a penalty here in Ontario.

I do not expect Hydro-Québec and Manitoba Hydro to give us a discount price, or much of a price discount, from that which they can get in the United States. While we are pursuing these negotiations sincerely and determinedly, because we really do want to find out whether it is a real option or just a paper option, I must say that the prices I have seen to date would not be very attractive for Ontario.

Mr. Runciman: That sounds like a no to my request. I think that at some point this committee has to take a look and be updated by someone in Ontario Hydro as to where those negotiations stand and what the likelihood of success is. Mr. Franklin obviously is not very optimistic. I do not think that we can really conclude our deliberations without having some sort of an assessment of where those negotiations stand.

Mr. Franklin: I think it is important, when we come to a definitive plan, that indeed those options and the costs of those options are available publicly. I am not sure that they are integral to the review of the principles that are involved before you. I would value your better judgement on that. To me, I do not think that knowing the comparative price of purchases versus coal, oil or gas and nuclear at this stage is

essential for the committee, but that is a decision you would have to make.

Mr. Runciman: Rather than prolong things, I suggest that the steering committee take a look at it in consultation with Mr. Passmore and that then perhaps we reach some sort of conclusion, if we can.

Mr. Chairman: All right. Are there any other questions of Mr. Franklin?

Mr. Cureatz: I have a question to the committee.

Mr. Chairman: All right. Then seeing none—oh, Mr. McGuigan.

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Mr. McGuigan: Having been on this committee—I guess this is my third episode, and I thoroughly enjoy it, too—one of the arguments we often hear is how to price in the offering price you give to cogenerators, whether it is the marginal price or whether it is the average price and whatever.

I do not think anybody knows what is a perfect way of doing this. I guess if I was in business—I believe business makes a lot of mistakes. Because they do things, they make mistakes. I would like to see Hydro take a chance of making a mistake once in a while.

What I am suggesting is, why do you not make an offer, say four cents a kilowatt-hour, or 4.5 cents, and guarantee that for five years for a certain amount for a certain number, say 1,000 big units—what do you call them?—and see what is out there? Smoke them out. Smoke out the enemy and see what the heck is out there.

Mr. Franklin: I believe that the current power rate offered by Ontario Hydro for parallel generation for a five-year term is 3.96 cents a kilowatt-hour, which is as close as “damn” is to swearing to the four cents you suggest.

Mr. McGuigan: I will raise it to 4.5 cents.

Mr. Franklin: We are getting reaction. We are getting some bids and I am encouraged by it. It is one reason we increased the expectations from that from 330 megawatts to 1,000 megawatts because of the interest that has been shown. I think you and I do not have that much difference of opinion between us.

One thing I would like to see—and I am not sure I have a lot of support for this, generally speaking—I believe it is all right to have a flat rate like that for rather small generation, but when you get into large installations, that could be a real windfall for people. What I would prefer to have is some kind of a bidding system. The

private sector likes competition and they like bidding and what have you.

It seems to me that when you get above five megawatts, between five and 20, say, maybe we should be calling for proposals and take the cheapest one we get, provided it is below our avoided costs. Really, that way you get the most economic parallel generation, independent generation, without having to offer some kind of windfall to somebody because he has a large installation. I would also like to go in that direction too, perhaps, in the future.

Mr. McGuigan: I guess you are not too far off when you said as long it is below your avoided costs, meaning your marginal costs.

Mr. Franklin: That is right. Accept that as kind of a ceiling and then say, “OK, we will take everybody who can come in for the first 100 megawatts,” or whatever it is we need, and take everybody then in the order of their cheapness, if you like, compared to that level, and get some competition going.

Mr. McGuigan: That is along my line of thinking, because I think there has to be a lot of it out there. You could drive by an oil refinery and see the amount of heat that is being wasted around a thing like that. It just makes you cry when you think of our fossil fuels being wasted and being used up, burning gases, flaring them off and all that sort of thing. It just seems to me, I guess, in moral terms, a sin to be wasting energy in that fashion when we know the world is going to be short of it.

Mr. Chairman: Seeing no further questions of Mr. Franklin, I would like to thank you for coming and appearing before the committee.

Tomorrow the committee is going to be having an in camera briefing, and I have been asked to ask the members to make sure to bring their copies of the DSPS so that they can follow what is going on.

Mr. Cureatz: I have a suggestion to the committee, Mr. Chairman, if you would give it some consideration. As Mrs. Grier pointed out back whenever, with the presentation of Hydro, we will have volumes of information. I am wondering if the chair might consider that at the end of each week there might be sort of a review of the week's events. I do not mean five or 10 pages, but one or two pages such as, “In the morning, the president of Ontario Hydro; in the afternoon the Minister of Energy made a presentation,” to have some consistency to the overall committee hearings, because I am going to find, and I think we will all find, we will get so

many volumes and it is going to be piling up on our floor—Jerry has a thought there; someone is laughing. It is true. It piles up in heaps and then you sort of get bogged down with what happened when.

Mr. Chairman: Are you talking about summaries of the testimony that has come before us?

Mr. Cureatz: Yes, a day-to-day summary, two to three points. I know it will not cover all the areas, but just sort of a refresher. Then we can keep that in a separate file so that we can—at least I would find it helpful in refreshing my memory. As the new week begins, I can review the last two or three weeks.

Mr. Richmond: Mr. Cureatz, I would just like to indicate, as with many other committees around this place, what we are going to be preparing. You have seen those summaries that we do for various committees. We are preparing such a summary. The key points and recommendations of all witnesses and all depositions before this committee will be integrated into that summary to the best of our ability.

In fact, I have started working on the summary. It will be organized under topic headings as best possible related to DSPS, and after each comment, including the deputations from Ontario Hydro that we are about to hear, the person or the individual who made those

comments will be identified. In fact, I have been scribbling here some notable points from Mr. Franklin's testimony. With respect, would that suffice?

The only problem is, because we are meeting so heavily, practically speaking, you might not see the document for a few weeks because we are playing catch-up. Would that suffice?

Mr. Cureatz: I was sort of hoping for something on a more—I know the summary you are referring to. It is very detailed and most appreciated. I was thinking of something in a more chronological order, but I suppose I will just rely on the agenda as it comes up.

Some other members might run across a similar thought. We will see how it all unfolds.

Mr. Franklin: I did not mention it, but I think it goes without saying that I would be quite happy to return to the select committee hearings at any time if you think I could shed some light or be helpful to the committee. I just wanted to make sure that that was clearly understood. That probably went without saying.

Mr. Chairman: Could I ask the subcommittee to meet in the next room perhaps immediately after this meeting?

The committee adjourned at 5 p.m.

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Wong, Hon. Robert C., Minister of Energy (Fort York L)

From Ontario Hydro:

Franklin, Robert C., Chairman and President

McConnell, Lorne G. W., Vice-President, Corporate Planning Branch



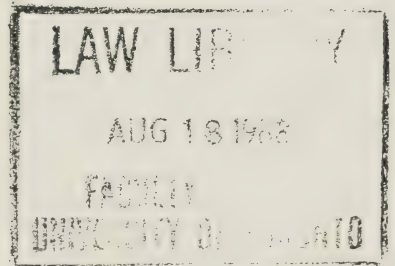
No. N-5

Hansard

Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy
Electricity Demand and Supply



First Session, 34th Parliament
Wednesday, August 3, 1988

Speaker: Honourable Hugh A. Edighoffer
Clerk of the House: Claude L. DesRosiers

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Contents of the proceedings reported in this issue of Hansard appears at the back, together with a list of the members of the committee and other members and witnesses taking part.

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Wednesday, August 3, 1988

The committee met at 2:15 p.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY (continued)

Mr. Chairman: I call the committee to order. I have turned off the air conditioner as it is a bit noisy and I think we can hear better without it. We will see how long the room stays cool, shall we?

For the benefit of the members, in this afternoon's session we are going to be hearing from Ministry of Energy staff who are going to talk to us about the municipal utilities act and the Power Corporation Act, lay out a bit of the legislative framework and talk a bit about the players in electric generation and distribution in Ontario. Then we are going to hear from Ministry of the Environment staff who will speak about the Environmental Assessment Act and the various processes involved within environmental assessment so the committee can get a bit of a feel for how that process works.

Our first witness will be Ed Ciemiega from the Ministry of Energy.

Mr. Ciemiega: Mr. Gardner is here too.

Mr. Chairman: All right. Perhaps when you take your seat, for the benefit of Hansard, you could introduce those who are with you. I turn the floor over to you.

MINISTRY OF ENERGY

Mr. Ciemiega: I have been asked to give a brief rundown of the legislative framework affecting Ontario Hydro. I propose to deal mainly with the statutes for which the Ministry of Energy has administrative responsibility and also to touch on two federal statutes, the National Energy Board Act and the Atomic Energy Control Act.

At this time I would like to introduce Art Gardner. Mr. Gardner is deputy general counsel with Ontario Hydro. Together, the two of us would be pleased to answer any questions the committee might have.

Under the provisions of the Ministry of Energy Act, the Minister of Energy has general responsibility for the energy policy review, development and co-ordination. The minister is also specifically charged with the administration of the Power Corporation Act and the Ontario

Energy Board Act. It is the Power Corporation Act which gives rise to Ontario Hydro and is its constituting statute.

The origins of the current legislation came into existence in 1906 as a result of the recommendations of the Beck commission. Over the years, there have been legislative amendments to the legislation. The thrust of the original act, however, remains the same. Ontario Hydro's mandate is still to service the entire province with electrical energy and to provide power at cost.

Both the Minister of Energy and the Treasurer of Ontario are referred to in the Power Corporation Act. It is with the minister that Ontario Hydro must file its annual report. Certain activities in which Ontario Hydro wishes to engage are subject to the Lieutenant Governor in Council's approval. It is through the Minister of Energy that Ontario Hydro seeks such approval. As you know, the Treasurer of Ontario has responsibility for the finances, credit and economic policy of the province. Thus, in certain financial matters, Ontario Hydro must deal with the Treasurer.

As I have already pointed out, Ontario Hydro is constituted as a body corporate by the Power Corporation Act. It is a statutory corporation and, as such, it has only those powers which are given to it by the Legislature. It is a legal entity. However, it is a corporation without shareholders or members. Under the act, it is a corporation composed of those persons who from time to time comprise its board.

Ontario Hydro's board of directors is appointed by the Lieutenant Governor in Council. The chairman may be appointed for a five-year term which is renewable, whereas the directors may be appointed for up to three years. Under the act, a director may serve a maximum of three successive terms.

The president of the corporation is not appointed by the Lieutenant Governor in Council but by the board, on such terms of employment as the board considers desirable.

It is important to remember that a director may only be removed before the expiration of his or her term for cause.

The act provides that the business and affairs of the corporation are under the direction and control of the board. The directors have a

responsibility to act honestly and in good faith, with a view to the best interest of the corporation. It is to be noted that there is no provision in the statute for the government to give a direction to Ontario Hydro. The minister cannot, as a matter of law, direct the director how to vote.

Generally speaking, the purposes and business of Ontario Hydro are set out in sections 56, 56a and 56g of the Power Corporation Act. Section 56 states:

"The purposes and business of the corporation include the generation, transmission, distribution, supply, sale and use of power and, except with respect to the exercise of powers requiring the prior authority of the Lieutenant Governor in Council under this act, the corporation has power and authority to do all such things as in its opinion are necessary, usual or incidental to the furtherance of such purposes and to the carrying on of its business."

It is a broad grant of authority, but it is limited to matters dealing with electric power.

In 1981, when the government wanted Ontario Hydro to deal with matters not directly related to the provision of electricity, i.e. offering energy conservation programs and the making of loans for energy conservation purposes, it had to amend the Power Corporation Act in order to authorize Ontario Hydro to do so. The same is true for heat energy.

Notwithstanding this broad grant of powers in matters relating to the provision of electricity, there are restrictions to which Ontario Hydro is subject. There are many matters under the act that Ontario Hydro can do only if it has the prior approval of the Lieutenant Governor in Council.

For example, Ontario Hydro can undertake major projects, such as acquiring and constructing works for the production of power, only with the approval of the Lieutenant Governor in Council. If Ontario Hydro wishes to construct generating facilities, acquire water rights or acquire land, it must seek Lieutenant Governor in Council approval.

Here I would point out that the initiative comes from Ontario Hydro. If Ontario Hydro does not recommend, there is nothing for the government to approve. This section does not contemplate nor does it authorize the government to direct Hydro to do something.

Another limitation, if we may categorize it as such, is the requirement set out in section 75 of the Power Corporation Act that Ontario Hydro is to provide power at cost to municipal corporations.

As already pointed out, in 1981, when the government wanted Ontario Hydro to engage in energy conservation programs, it was necessary to amend the Power Corporation Act, because the cost of those programs could not be added to the cost of power without such an amendment.

Another amendment was necessary to allow Ontario Hydro to recover any additional costs arising out of the rural rate differentiation program. This amendment provided that the average rural residential hydro bill should be no more than 15 per cent above the weighted average municipal bill.

Another limitation or control on the powers of Hydro is that Ontario Hydro can borrow money only with the approval of the Lieutenant Governor in Council. As mentioned previously, the approval of the Lieutenant Governor in Council is sought through the Treasurer. Under the provisions of section 69 of the Power Corporation Act, contracts for the supply of power, other than to municipal corporations and certain park boards, are subject to approval by the Lieutenant Governor in Council.

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Recently, the government introduced legislation which would further limit Ontario Hydro's discretion. Under Bill 168, Ontario Hydro is restricted from exercising its discretion to sell power outside Canada unless the supply of power is surplus to the reasonably foreseeable power requirements of Ontario and other customers in Canada and the price to be charged for that supply of power is more than that charged to customers in Canada for equivalent service.

Another limitation affecting Ontario Hydro is found in the Ontario Energy Board Act; it relates to rate changes which Ontario Hydro proposes to make for power supply to its industrial customers and municipal corporations and commissions. A proposal by Ontario Hydro to change rates or charges must be given to the Minister of Energy at least eight months before the new rate is to come into effect. The minister is required to refer the proposal to the Ontario Energy Board. The Ontario Energy Board must hold a hearing and issue a report at least four months prior to the effective date of the proposed change in rates or charges. However, as you know, the report and its recommendations are not binding on Ontario Hydro.

In addition to the Ontario Energy Board Act, there are other statutes to which Ontario Hydro is subject, statutes like the Expropriations Act and the Environmental Assessment Act. Under the Expropriations Act, the Minister of Energy is the

approving authority in relation to expropriations made under the Power Corporation Act. It is my understanding that representatives from the Ministry of the Environment are going to address the committee on environmental matters.

Two other matters dealt with in the Power Corporation Act which might be of interest are the relationship between Ontario Hydro and municipal utilities and Ontario Hydro's general responsibility for the electrical safety code.

Municipal utilities are independent bodies under the Public Utilities Act and, as such, are not subject to any general direction by Ontario Hydro. However, the Power Corporation Act gives some very specific powers to Ontario Hydro. It provides that the rates and charges for supplying power by a local utility are subject to the approval and control of Ontario Hydro. Ontario Hydro has the authority to approve the borrowing of funds by a municipal corporation for the extension or improvement to a power system. Ontario Hydro has the authority to approve the use of surplus funds. It may prescribe for a municipal corporation or commission a system of bookkeeping and it may audit.

Under section 93 of the Power Corporation Act, Ontario Hydro has the approval, with the approval of the Lieutenant Governor in Council, to promulgate an electrical safety code and has in fact done so. Under the provisions of the act and the code, Ontario Hydro has jurisdiction over the design, construction, use, maintenance, repair, etc., of electric appliances and electrical services of all kinds. This section authorizes Ontario Hydro to appoint inspectors not only to test various appliances, but to conduct inspections for the purposes of the act.

To mention briefly the federal involvement, because of the Constitution Act of 1867 granting authority over international trade and commerce to the Parliament of Canada, regulation of electricity exports is within federal jurisdiction. Federal regulation also extends to international power lines; because of the Constitution Act, they are federal works. My understanding is that the federal government has been involved in the regulation of electricity exports since 1907, with the enactment of the Electricity and Fluid Exportation Act.

The current National Energy Board was formed in 1959. During the passage of the legislation creating the board, the then federal Minister of Trade and Commerce stated:

"As regards the exportation of electric power, the key principle will be that quantities proposed to be exported must be surplus to present and

reasonably foreseeable Canadian requirements. In the case of electricity, it has been the policy in the past to grant only annual licences for export so as to prevent permanent alienation of power. This remains the general policy, although some exceptions may be made in very special circumstances where the national interest would not be prejudiced by a longer-term export."

It is to be noted that the National Energy Board Act extended the maximum export licence period from one to 25 years, although it was anticipated that long-term licences for electric power would be granted only in exceptional circumstances.

The National Energy Board's current regulatory responsibilities with respect to electric power are in the issuance of export licences and orders to the end that proposed exports be in the national public interest. The board is empowered by the National Energy Board Act, after taking into account all considerations that appear to it to be relevant, to authorize for periods no longer than 25 years electricity exports which the board is satisfied would not exceed the surplus remaining after due allowance is made for reasonably foreseeable Canadian requirements and would be made at a price which is just and reasonable in the public interest.

The second major regulatory responsibility of the National Energy Board is the certification of international power lines. To the end that construction and operation of an international power line be in the national public interest, the board is empowered by the National Energy Board Act, after taking into account all relevant considerations, to authorize the construction and operation of international power lines which the board is satisfied are and will be required by the present and future public convenience and necessity. The board is also empowered to approve the detailed route of an international power line.

The National Energy Board Act was amended in 1983 to allow the Governor General in Council to designate any facility to be constructed and operated for the purpose of transmitting power from a place in any province to a place in Canada outside the province as a facility to which provisions of the National Energy Board Act apply. It is my understanding that, to date, this section of the act has not been used.

I also mention the Atomic Energy Control Act. Under the provisions of section 17 of that act, all works and undertakings for the production, use and application of atomic energy are declared to be works for the general advantage of Canada and therefore come within federal jurisdiction.

That act authorizes the Atomic Energy Control Board, with the approval of the Governor General in Council, to make regulations for developing, controlling, supervising and licensing the production, application and use of atomic energy. Thus, Ontario Hydro's nuclear plants come within the licensing authority of the federal government.

By way of recapitulation, I would point out that the Power Corporation Act contains approximately 108 sections, and in 32 of those sections some reference is made to the Lieutenant Governor in Council, the Treasurer or the minister.

Under section 3 of the act, the Lieutenant Governor in Council appoints the chairman and the directors and sets out the remuneration. Under section 7, any expenditure incurred by the corporation for works or services in carrying out the direction of the Lieutenant Governor in Council may be included by the corporation as part of the cost of supplying power. Section 9 requires the corporation to file with the Minister of Energy an annual report on the affairs of the corporation.

Section 10 authorizes the Lieutenant Governor in Council to direct that the accounts of the corporation be audited. The Lieutenant Governor in Council may name the auditors and fix the expenses of the audit. There is a statutory requirement that there be at least one audit annually. Under section 18, the Lieutenant Governor in Council may authorize the corporation to postpone collection of the sinking fund. Under section 20, pension fund regulations are subject to the Lieutenant Governor in Council's approval.

Under section 21, the Lieutenant Governor in Council may approve agreements with municipal corporations whereby municipal employees would be included in the pension fund. Under section 22, the Lieutenant Governor in Council may require the corporation to investigate and report on water powers and privileges. Under section 23, the powers of expropriation are subject to Lieutenant Governor in Council approval. Under the same section, contracts for the supply of power to Ontario Hydro are subject to Lieutenant Governor in Council approval. Under section 24, changes in periodicity and alterations of current are subject to Lieutenant Governor in Council approval.

Under sections 25 and 26, the standardization of frequencies is subject to Lieutenant Governor in Council approval. Under section 32, Ontario Hydro may, when authorized by the Lieutenant

Governor in Council, take possession of and use lands, remove trees, obstructions, etc. Under section 34, it is the Lieutenant Governor in Council who appoints the members of the board of valuation. This is the board that sets compensation for damage, etc., in disputes between land owners and Ontario Hydro.

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Under section 40, the Lieutenant Governor in Council may direct a judge to determine the proportions of costs of works on waters to be borne by municipal or other owner of water power. Under section 46, it is the Treasurer of Ontario who decides whether the tax exemptions set out in the section apply to any property of Ontario Hydro.

Under sections 47 and 48, the Lieutenant Governor in Council, for purposes of the act, may raise loans, pay out appropriate moneys or order special warrants. Under section 51, Ontario Hydro is vested with the general borrowing power. Here, again, the corporation may only borrow with the approval of the Lieutenant Governor in Council.

Under section 53, the Lieutenant Governor in Council may guarantee securities of the corporation. Under section 54, the Lieutenant Governor in Council may guarantee performance of the corporation's contracts for the purchase of shares. Under section 55, the corporation may borrow by way of temporary loans and pledge security subject to the approval of the Lieutenant Governor in Council.

Under section 56d, the corporation may, with the approval of the Lieutenant Governor in Council, produce heat energy. Under section 57, the Lieutenant Governor in Council may authorize the corporation to manufacture electrical, hydraulic and other machinery. Under this section, the Lieutenant Governor may also authorize the corporation to carry on research for extending the use of power. Under section 59, subject to approval by the Lieutenant Governor in Council, the corporation may utilize unused works to produce revenue.

Section 60 authorizes the Lieutenant Governor in Council to approve a form of contract used by the corporation with municipal corporations. Under section 64, the Lieutenant Governor in Council may direct an inquiry to ascertain rights in case of a dispute over a municipal power franchise.

Under section 69, certain contracts for the supply of power are subject to approval by the Lieutenant Governor in Council. Under section 72, with approval by the Lieutenant Governor in

Council, the corporation may control the supply of power in emergencies.

Under section 83, subject to approval by the Lieutenant Governor in Council, the corporation may contract with townships. Under section 85, subject to approval by the Lieutenant Governor in Council, the corporation may contract with park boards.

Under section 93, with the approval of the Lieutenant Governor in Council, the corporation may make safety regulations.

You can see that there is a certain degree of control. That is all.

Mr. South: Does the Power Corporation Act give Ontario Hydro the authority to negotiate deals outside the province, to purchase power, for instance, from Quebec or Manitoba?

Mr. Gardner: Yes, we have been purchasing power outside the province since at least the 1920s.

Mr. South: But what gives you the power to do that, the authority?

Mr. Gardner: It is under subsection 23(2).

Mr. South: Of the Power Corporation Act?

Mr. Gardner: There are a number of clauses here. I believe it is clause 23(2)(h), "contract with any person generating, transmitting or distributing power, or proposing so to do, to supply power to the corporation." Did you find that? If you have the same edition as I have, it is page 16.

Mr. South: Yes, I see it.

Mrs. Sullivan: I have two questions that are unrelated. The first relates to the ability of Hydro, from an operational sense, to really have aggressive energy conservation programs. I see in section 56b that the corporation may lend money for the acquisition or installation of equipment and so on, in conjunction with an energy conservation program. Does Hydro, somewhere else or through some other section of the act, have power, for example, to make grants?

Mr. Gardner: Not at present, Mrs. Sullivan.

Mrs. Sullivan: The second question I have relates to the ongoing review of the Power Corporation Act. Clearly Mr. Gardner's report to us this morning has talked about the legal accountability of Hydro in certain areas. It seems to me that your view is that is a fairly thorough accountability through various provisions in the Power Corporation Act. I wonder if you would have comments that could be shared with us today relating to some of the matters that are

under consideration in relationship to changes in the Power Corporation Act or in the memorandum of understanding.

Mr. Ciemiega: I am afraid not. I would not think so. We do not have authority to do that.

Mr. McGuigan: In relation to the power of Ontario Hydro to loan money to consumers, assuming under the conservation policy, the customer has to make a case that by putting in this insulation, these windows or whatever, you are going to require less power. Is there any authority to loan money in relation to other forms of power?

This relates to a question I asked yesterday. A company might want to have lines put on to its property or transformers, switch gears and all this sort of stuff, to accommodate electric power versus using fossil fuel power where they do not require all those capital costs. Does Hydro have any power to loan or make any sort of contract that this be paid over a number of years rather than having to require upfront money to put the facility in?

Mr. Gardner: There have been many ways of structuring loans. To some extent, energy conservation has been given a very broad meaning. It can influence fuel choice. If you think electricity is the right energy source, you would really want to make a loan.

If the savings to the power system are significant, occasionally one can structure a forgivable loan or a no-interest loan. There is a lot of flexibility there. There are a lot of techniques that are being used, but within the bounds of the section.

Mr. McGuigan: Put it down to the case that I have in mind. It is somewhat personal, but many of my constituents have the same problem. Powering irrigation pumps; if we want to put in an electric pump, this has many advantages as far as the operation is concerned. It might even cost more, I am not sure, but even the extra costs would be justified by the advantages to the system. If they came to Hydro and said, "Will you help us put in the switch gear, put in the poles and the Hydro wires?" would they be liable to listen to this?

Mr. Gardner: I think they should get in touch with our demand management branch because they are interested in any savings that could be made. I think it should be talked through with them. You are from western Ontario?

Mr. McGuigan: Yes.

Mr. Gardner: So you could deal right with the western regional office. Mr. Drinkwater is

the director there. They certainly would investigate it. I would encourage you to follow that up.

Mr. McGuigan: So it is not a flat no to my question?

Mr. Gardner: No, it is not a flat no from me.

Mr. Charlton: Part of what I wanted to raise has already been nonanswered. I understand that you gentlemen do not have the authority to talk about the specific changes under the Power Corporation Act that are being looked at by the ministry, but can you give us a bit of information by way of background about the approaches being taken to that review of the Power Corporation Act?

I think you understand the quandary the committee is in, having a formal report of this committee sitting out there with the recommendations apparently undealt with. Can you tell us whether at least the review of the Power Corporation Act took as its base the recommendations of the select committee of two years ago? Is that the kind of approach that is being taken to the review?

Mr. Ciemiega: I would think that the policy people would look at everything, including that, yes.

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Mr. Charlton: Are you too personally involved in the review itself?

Mr. Ciemiega: Not directly.

Mr. Charlton: Are you in touch with the review?

Mr. Ciemiega: Yes.

Mr. Charlton: Can you give us some kind of indication in terms of time line, when we are likely to see the legislative amendments announced?

Mr. Ciemiega: That I could not do.

Mr. Matrundola: Mr. Chairman, I would like to ask a couple of questions which may not be quite related to these, but which, in my own mind, are certainly important. Does Ontario Hydro supply electricity to users directly or do you supply through the local hydro agency of the municipalities? Take, for example, North York Hydro and Ontario Hydro. In my home, electricity is supplied by North York Hydro. Do you have clients per se directly, or is it always done through the municipality?

Mr. Gardner: Ontario Hydro is both a wholesaler and a retailer, so we deal directly with about one million customers.

Mr. Matrundola: Who sets the price of hydro per kilowatt?

Mr. Gardner: Your price from your own local utility will be based on the wholesale cost, and it is a common cost to all municipal utilities. Then they have to add in their own distribution costs within the municipality, and that would be affected by their own labour rates and the kind of system they want to establish. That gives rise to the differences between North York and perhaps Scarborough.

Mr. Matrundola: In other words, when Ontario Hydro sells hydro to North York Hydro, Richmond Hill Hydro or the Markham Hydro Electric Commission, the price is the same per unit to all the different municipalities?

Mr. Gardner: It is made of two components, but it is a common price. There is a price for demand and a charge for each kilowatt-hour supplied.

Mr. Matrundola: I understand. The point is, do you have a different price for different municipalities, according to the amount of electricity used or is the price so much per kilowatt, whether the municipality is buying 1,000 megawatts or 30,000 megawatts, to go to the extreme?

Mr. Gardner: Basically the price is the same. Delivery-supply conditions will give rise to some price differentials. If we deliver a high voltage of 230 kv, as we would do in the Kitchener area, they get a bit of a break because they are incurring the cost to take it down to lower voltages.

Mr. Matrundola: So there is a fluctuation in price.

Mr. Gardner: Essentially, it is a common price, differing only by what you assume are normal variations due to supply conditions.

Mr. Matrundola: Then the municipalities set their own prices for their own customers, the retail price.

Mr. Gardner: Yes, subject to Ontario Hydro's regulatory control, which was mentioned by Mr. Ciemiega.

Mr. Matrundola: I see, and that again may fluctuate according to the municipality and users and so forth.

One more question please: when you supply hydro directly, to a large customer, is the price more or less in the same level per unit as supplied to municipalities or may it vary a lot?

Mr. Gardner: All the large, direct customers and our rural customers are lumped together and treated as if they were one large municipal utility for allocating costs. When you start setting rates

to recover that cost responsibility from that conceptual utility, then slight differences come in because we would set rates for a direct customer a little differently than Hamilton Hydro might set rates for Dofasco. That is essentially the reason there are slight differences. There are moves to reduce even those differences, which were before the Ontario Energy Board this spring.

Mr. Matrondola: Dofasco is a good example. Do you supply directly to Dofasco, or do they buy through Hamilton?

Mr. Gardner: I think you have me there. Some years ago I know we supplied directly to Dofasco, and I think we still do. They have relinquished their right to supply to us.

Mrs. Grier: I wanted, if I could, to come back to the question of accountability because, certainly in your recitation of the sections of the Power Corporation Act, it appeared clear that the power for the government to say yea or nay to Hydro was there. I think I understood you to say the government could not direct Hydro to do things, but certainly an awful lot of Hydro's actions were subject to review by the government. Is that a correct interpretation?

I would be interested in hearing a little about the mechanism within the ministry, because I am not familiar with your organizational chart, to undertake that review. If, for example, Hydro comes to you with a recommendation, what happens then? How is it evaluated within the ministry?

Mr. Ciemiega: Well, there would be a recommendation for an order in council. Therefore, it would need the minister's approval before it is sent on to cabinet, but before the minister sees it, it would go to the proper people in the ministry, whichever area would be involved and they would, in effect, study whatever it is that had been submitted and come forward with their recommendation. Only after that recommendation comes forward does the minister look at it and make his determination.

Mrs. Grier: So it is an independent evaluation within the ministry of any recommendations that come from Ontario Hydro?

Mr. Ciemiega: Not all of them come to the ministry. There are those relating to financial matters which would go to the Treasurer (Mr. R. F. Nixon), and there, I am sure, they would do the same thing.

Mrs. Grier: I see. For example, if it was a recommendation for approval of a capital allocation for a new generating facility, which you

indicated was part of its process, surely that would be reviewed by the Ministry of Energy, not merely by the Treasury.

Mr. Ciemiega: Probably both.

Mrs. Grier: But there is no recognized—

Mr. Ciemiega: I am sure there is. I am just not that familiar with what the process might be.

Mrs. Grier: Is there any mechanism within the ministry for a follow-up on the implementation of those recommendations by Hydro? When Hydro comes to you and makes a recommendation and it is approved by the Lieutenant Governor in Council, does anybody then monitor the following through on that recommendation?

Mr. Ciemiega: I would believe that is the case, yes. I personally do not know. I have not been with that ministry that long.

Mrs. Grier: But there is, presumably, legislative authority for that kind of monitoring to occur from the ministry?

Mr. Ciemiega: I do not think you would need legislative authority to do that.

Mrs. Grier: Because at that point it is a recommendation of the government, not of Hydro, if it is being implemented—

Mr. Ciemiega: There can be audits under the act, as I pointed out. The Lieutenant Governor in Council appoints the auditors and I am sure he can send them whenever he wants, to go in and look at whatever he wants.

Mr. Runciman: The chairman was before us yesterday. I do not have all the details on this, but I know I have been contacted by some people with concerns about Hydro not having any debt repayment plan in place. The chairman mentioned that there was a statutory requirement in terms of debt repayment. I am wondering if you could outline what that requirement is and if it deals in a meaningful way with the debt carried by Hydro.

Mr. Gardner: They are in clause 75(c) of the act, and this section has really given great support to Hydro in raising money in the markets. There is a requirement that, included in the cost of power, there must be "an annual sum sufficient to form in 40 years, with interest at four per cent, a sinking sum for the repayment of the advances made by the province of Ontario...for the repayment of any other indebtedness incurred or assumed by the corporation in respect of the cost of the works, and for the restoration of any reserve or other funds that the corporation utilized for the payment of the cost of the works."

So each year, when they are determining the cost of the power, they are, in effect, running a sinking fund charge to retire debt, and that money is applied to debt.

Mr. Runciman: When you are talking about retiring debt, I think of seeing at some point in the foreseeable future some diminution of the debt. Mr. Franklin indicated to us that he does not see that happening, that in fact, over the long haul, there is probably going to be some increase in the debt. He confirmed that about 50 per cent of their revenues are now directed towards paying on the debt.

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I am concerned that, as you read it, I guess there is no requirement there to really and effectively retire the debt. It is in how you interpret the retirement of debt, whether you have a debt and you pay it off, but the total level of debt remains constant or gets even higher, tends to increase. I am wondering about the legal interpretation with respect to the retirement of debt.

Mr. Gardner: The act permits it to be used for the restoration of expenses, which is debt if you had to borrow the funds to incur those expenses. You are retiring debt. Remember that your assets are growing too all the time, so as long as this sinking fund is running, eventually you would retire all debt if you stopped building.

Mr. Charlton: So too the debts will increase by several hundred million each year as the capital construction goes on.

Mr. Runciman: As a person sitting on the outside looking in, in terms of 50 per cent of the revenues being directed towards the debt repayment and the general reluctance on the part of Hydro to use windfall revenues—for example, that which may come as a result of the differential in the Canadian-United States dollar this year—to significantly impact on its debt over the longer term, I am just wondering if the wording of the legislation is strong enough in terms of increasing the level of accountability in that one direction, in terms of the debt. It is a major concern of many, I think, obviously not the people who give them their credit rating, but others have some concerns.

I am not sure where I am going on this, but I know it has been expressed just recently by, I think, the chairman of the board of the public utility in North York. There was an article in one of the Toronto publications with respect to their concerns about the debt and its implications for Hydro in the future.

Mr. Gardner: All I say is that the act establishes a minimum standard. In its proper financial management after that, how far you go is a matter of judgement, I guess.

Mr. Runciman: We were made aware of something the other day. Mr. Ciemiega mentioned that the licensing of nuclear plants comes within the purview of the federal government. A federal committee recommended a freeze on nuclear plants until an answer is found for the disposal of waste. We were advised that the federal minister has indicated he is going to disregard that recommendation because that falls within provincial jurisdiction. Is that a contradiction?

Mr. Gardner: I heard that Mr. Masse had said that this report by a committee was not going to bind the government. I had never heard that reason before. I am surprised, but I assure you that, clearly, nuclear plants are licensed by the federal government. They have the last say-so on whether one is built or not.

Mr. Runciman: That was a comment made during one of our subcommittee meetings. I am not sure who advised us of that fact. You would have difficulty with that statement.

Mr. Gardner: I would have difficulty with that statement.

Mr. McGuigan: Gentlemen, you have given us quite a litany of the controls that exist. Is it fair to say, as a sort of general, overall statement, that the government has pretty wide powers of control over Ontario Hydro, particularly in the financial area and in the regulatory area, whereas it does not have control over directing Hydro to do certain things? Is that the general picture we can take from your presentation?

Mr. Gardner: I think that would be a fair statement.

Mr. McGuigan: I guess those of us who sat in opposition, particularly when our leader was Dr. Smith who was always making an attack on Hydro, would listen to the former Premier, and it was always his contention: "Well, there is this distance from us. We have the Power Corporation Act and you are really attacking the wrong people." He created the impression that we do not have any control over Hydro.

I guess a lot of us suspected, but did not have the information you brought forward, that really any government, whether it is the present one or whatever government, has a good deal of control over Hydro, except that you cannot direct Hydro to do certain things. That is a pretty fair statement.

I just want to clear up another point on rates. Mr. Matrundola brought up the subject. You still have to look at this somewhat in isolation. This is a person who lives in the shadow of Niagara Falls. The household bill would be at the same rate as for someone in, say, North Bay, except for however the local municipality might affect that rate. Is that correct?

Mr. Gardner: That is correct. Essentially, that is the story.

Mr. McGuigan: What brought that up is that I visited Love Canal on the American side, and one of the explanations they gave for the fact that Love Canal existed there was that in the early days of Hydro—this would be in the early 1900s—the American power producers gave a cheaper rate right at the plant gate so the chemical industry, which was a very heavy user of electricity, established itself in that area and then threw its waste out in the backyard. In fact, it threw it into Love Canal. So you do not do that in Canada. You have an equalized rate no matter where you live except for whatever the municipality does.

I remember when Cyanamid Canada Inc. established its nitrogen plant in Courtright within a stone's throw of the Lambton generating station. It was said the reason it located there was because it were close to that generating station and power was cheaper. I have no axe to grind against the fertilizer plant. I am just wondering, was there any truth to that statement? I remember hearing it.

Mr. Gardner: The system you refer to in the United States did exist in Ontario up to about 1965. It used to be called "costing by wire." Depending on how far you were, the price would be slightly different. Most of the costs are pooled and while there are some common costs, there are a few noncommon costs.

If a utility wants some special thing done for it, it has to pay for that. It is the typical thing you would do if you were running your own business if a customer wants a special deal. He wants you to provide the transformer, so he is going to have to pay rental and things like that. It has been essentially common cost pooling.

Mr. McGuigan: This was in 1965?

Mr. Gardner: Yes.

Mr. McGuigan: Was an amendment required?

Mr. Gardner: No. That was just a business decision Hydro made.

Mr. McGuigan: I think that plant probably predated 1965.

Mr. Gardner: They may feel that getting near Lambton they have a security of supply, being next to a plant. A short-line length of line for a chemical plant is very important. They may have been able to get dual-line supply off two circuits from a tower line, which would be a very high class of service. Those things are important to chemical companies.

Mr. McGuigan: They are right close to where a big line runs across the river. If there were a shortage in Ontario, it would pull in Michigan by Detroit Edison, I suppose. But since 1965, pricing is essentially the same all over the province. How does that apply to northern Ontario?

Mr. Gardner: There are some municipalities there, so they are on the same on common costs, but there are unorganized parts of the province where there is no municipal government and a few municipal governments have chosen not to set up utilities; Timmins, for example. We are the retailer. Essentially, the same common cost gets rolled into determining the costs of power to those customers, plus the distribution costs we have that are identified as related to that customer group.

1500

Mr. McGuigan: One could safely say then that Hydro does not have an influence on regional development as to whether an industry goes into eastern Ontario, northern Ontario, southwestern Ontario or whatever.

Mr. Gardner: I could not answer that question, Mr. McGuigan, because the rural rates are different from what you would pay in North York. I could tell you about the relativity influence in industry.

Mr. McGuigan: I am saying this on the basis of your saying costs are shared equally throughout the entire province.

Mr. Gardner: Certain basic generation costs and certain basic transmission costs. Then when you get down to distribution level, the cost differences get reflected in the rates.

Mr. McGuigan: Would it be safe to say that whatever influence you have is minor?

Mr. Gardner: I have never believed that an industry locates in Ontario particularly for Hydro rates. They come to Ontario, as distinguished from other states, for Hydro rates, but then when they get here they are looking at where they are in the Golden Horseshoe, because as long as there is a Hydro line nearby, they know the rates are essentially common.

Mr. Brown: I have a couple of questions, one relating directly to Mr. McGuigan's question. It is my understanding Ontario Hydro is prohibited by statute from using the rates as a development tool; in other words, for example, at this point, to grant special rates in a given area in northern Ontario just to attract industry or whatever. Is that correct?

Mr. Gardner: That is correct.

Mr. Brown: I was wondering, from your knowledge, what significant differences would there be between our Power Corporation Act and the acts of, say, the neighbouring provinces, Quebec and Manitoba? This may be an unfair question, but are there significant differences you might be aware of?

Mr. Gardner: Structurally, to get them out and read them, Manitoba's or Hydro-Québec's—Hydro-Québec is a different type of corporation, you know—you are going to read a lot and say, "Hey, that looks like the same legislation as in Ontario." They used us as a role model. We were the first. The contracts they use with their customers are a lot the same. Each province has its own special needs and it is reflected in its legislation, but they are not that different.

Mr. Brown: Ontario Hydro, therefore, as far as regulation goes, we could assume is relatively similar to the other major corporations in the country.

Mr. Gardner: I would say generally similar. Hydro-Québec is a special situation. It is now a corporation that pays a dividend back to the government, if you read the legislation, although it has not paid it for a few years.

Mr. Brown: Thank you.

Mr. Chairman: Thank you, Mr. Brown. Mrs. Sullivan?

Mrs. Sullivan: No, I will withdraw.

Mr. M. C. Ray: I would like to ask a couple of questions, one related to demand management and the relationship between Ontario Hydro and municipalities, municipal corporations and the private sector.

You have indicated there is no power to make grants. Is there in the Power Corporation Act or the Public Utilities Act any provision for Ontario Hydro to make orders or compel municipal corporations or private sector corporations or persons to adopt particular courses of action, especially, let us say, in particular demand-management measures?

Mr. Gardner: I would say the general answer to that is no. The government had to bring in the

Energy Efficiency Act. That reflects a recognition that to make progress in this area, it may have to bring in spot legislation.

Mr. M. C. Ray: They could include it, could they not, in part of the review of the Power Corporation Act, to empower Ontario Hydro to undertake such functions? But you do not know if that is under consideration.

Mr. Gardner: I could not say.

Mr. M. C. Ray: The second question I have relates to public accountability. You have said that Ontario Hydro is subject to the Expropriations Act and the Environmental Assessment Act. I am not sure if you mentioned the Environmental Protection Act. I am curious to know if it really has been subject to all of that legislation, in the sense that it has tried to seek exemption from the application of some of those statutes.

Since I am not too familiar with this, could you fill me in on the background of Hydro's environmental assessment exemption applications as they relate to transmission lines and also as they relate to the location of nuclear facilities?

Mr. Ciemiega: Perhaps that question had better be asked when the next panel appears, because they will be speaking about environmental assessment matters and they may be in a better position. Unless, of course, Mr. Gardner—

Mr. Gardner: I could give you a generalized answer, because we have lived with the Environmental Assessment Act now for 13 years. When the act was being promulgated with the regulations, every government institution—because it was just government institutions that were under the act at first; it did not affect the private sector or municipalities at the beginning—had projects in the works. They all received exemptions initially on projects that were far advanced or they would have had to stop them.

I think on that first list we got 17 exemptions and they were sort of job-specific, things that were going on. Then later, over the years, I think we have only received six or seven, mostly in the minor category, with the exception of Darlington which was in the advanced stage at that time.

The exemptions we have asked for or have got have not been overwhelming, whereas we have taken well over 100 projects through the Environmental Assessment Act process, with resulting approvals under the act, and only had two public hearings on transmission projects in eastern and southwestern Ontario, in both of which, by the way, we requested the hearings

ourselves. They were done under the Consolidated Hearings Act.

Mr. M. C. Ray: As a matter of course, then, Ontario Hydro will proceed through the environmental assessment process and not make application for exemption, or does it, in fact, make application for exemption as a matter of course and is forced through the hearing process?

Mr. Gardner: I think the asking for exemptions is very infrequent. Most projects are taken through under the act. I think the exemption number might be OH26, which means that in 13 years we have moved from 17 to 26, something like that, so it is nine.

Mr. Matrundola: I would like to ask how the Hydro rates are set and who authorizes an increase. How does that mechanism work?

Mr. Ciemiega: Are you talking about the rates Hydro wishes to charge to its industrial customers and the—

Mr. Matrundola: And residential, as well.

Mr. Ciemiega: I am not sure about the residential.

Mr. Gardner: We have to approve the municipal utility rates, under section 95 of the act, so they have to make a submission and back it up as to why they want to have a rate increase. In the rural area, Ontario Hydro fixes the rates and we also fix the rates to direct customers.

Mr. Matrundola: When Richmond Hill Hydro wants to have an increase to the customer, to the retail user, it has to make a proposal to you and then you will have to approve that increase and it has to substantiate that increase.

1510

Mr. Ciemiega: That is correct.

Mr. Matrundola: That is based upon the price Ontario Hydro sets to that.

Mr. Gardner: We know what the wholesale costs are—

Mr. Matrundola: From year to year or from time to time, how do you increase the Hydro cost that you wholesale to the municipalities?

Mr. Gardner: Most of those go through the process under section 37 of the Ontario Energy Board Act where we have to make the submission to the Minister of Energy eight months in advance. It goes through that process that was described.

Mr. Matrundola: Then it will be approved eventually.

Mr. Runciman: In terms of the Ontario Energy Board process where the rate request is

submitted to the board, in the last couple of instances, what has occurred there? I know there has been some discussion about the board's recommendations not being binding on Hydro. Has the energy board recommended higher rate increases than Hydro has proposed, or lower? I know there has been a difference.

Mr. Gardner: I believe the last increase was higher than what the board recommended, depending on the way you read the board's report. There was an error in their calculations, but I think we were higher in the end. I think there will be people here from the demand-management branch later who could give you information on the last 10 years, say, on what has happened. It sticks in my mind that historically, if we follow the energy board's recommendations, we would be one per cent higher today than what we put in, in effect, ourselves. From year to year, we may be lower or occasionally higher.

Mr. Matrundola: I have just one more question. For a 15,000-, 18,000-, or 20,000-volt Hydro line on wooden poles, how high are the exposed wires generally from the ground?

Mr. Gardner: I am sorry; I do not know.

Mr. Matrundola: Who would know that?

Mr. Gardner: There will be people before this panel later in these proceedings who are familiar with engineering details and how you construct Hydro lines.

Mr. Matrundola: Maybe the engineering department will know how high they need to be. In some cases, they seem to be very low, very close to the ground and could pose dangers sometimes.

Mr. Chairman: If there are no further questions, I think we have reached the end of the time for this section of the hearings. I would like to thank Mr. Ciemiega and Mr. Gardner for coming and speaking to us today.

I understand that the people from the Ministry of the Environment would like to set up some equipment, so I think we will adjourn the committee for about five minutes. We will turn the air conditioner back on as well.

The committee recessed at 3:14 p.m.

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Mr. Chairman: I wonder if I can ask everyone to take their seats and we will get the meeting under way again. I think we have our technical arrangements in place. I guess we will start this section. I will just wait for a couple seconds and allow everybody to get a copy.

I am going to leave the air conditioner on. I think the room warmed up a little. The experiment did not quite come out as I had hoped, so I

will ask again that everybody make a point of speaking directly into the microphone—that is for the benefit of the rest of the committee and for Hansard—and speak as loudly as possible. Perhaps the rest of the people who are not talking at any one time could avoid making too much extraneous noise. We have enough from the air conditioner. It is very distracting for all members.

This section of this afternoon's session will be from the Ministry of the Environment. We have today Ian Veitch and Michael McLeod, who are going to speak to us about the Environmental Assessment Act and some of the implications it might have for Hydro developments. Perhaps, Mr. Veitch, I could turn the meeting over to you.

MINISTRY OF THE ENVIRONMENT

Mr. Veitch: Thank you, Mr. Chairman. Good afternoon to all the committee members.

I would like to direct the presentation of the Ministry of the Environment to three specific areas this afternoon. For the first area, I would like to give you a general overview of the Ministry of the Environment's environmental legislation. The second area we would like to cover is an explanation of the Environmental Assessment Act and the process in more detail for the committee. The third area explains how the Environmental Assessment Act affects Ontario Hydro operations.

The purpose of the Ministry of the Environment is to act as a regulatory agency in protecting and wisely managing the environment of Ontario. The Ministry of the Environment uses four pieces of legislation: the Environmental Assessment Act, the Environmental Protection Act, the Ontario Water Resources Act and the Pesticides Act. What I would like to do for you is to give you a general overview of those pieces of legislation, leading to the Environmental Assessment Act which I will explain in more depth.

I would like to leave the committee with two general themes today. One is that the Ministry of the Environment employs a careful blend of incentives, disincentives and regulatory reactive and regulatory proactive approaches to protecting Ontario's environment. You can see from the overhead that the preventive medicine side of the ministry operates in a planning mode that is really a proactive approach to dealing with environmental protection. In this area is included a review of provincial and municipal projects under the Environmental Assessment Act and a review by the Ministry of the Environment of

land-use planning documents under the Planning Act.

A complement to the planning side of the ministry's activities is our well-known role in emission source control. In this area, we approve methods or devices to control and prevent emissions of contaminants under the Environmental Protection Act and the Ontario Water Resources Act.

We also have funding programs available to assist certain types of sewage, water and waste facilities that are proposed by municipalities and others. We also have a very sophisticated network of air and water quality monitoring across the province. In fact, our laboratories are known worldwide for their quality, analysis and comprehensiveness.

Diagnosis and treatment is another form of environmental protection that is really used in the ministry. In this area, we are referring to pollution abatement activities that react to pollution incidents and enforcement. We have increased our enforcement capability in the ministry. We have an enforcement branch that has increased staffing considerably in the past few years and a number of prosecution lawyers have been retained by the ministry.

We also have a spills action centre with a hot line by which people from across the province can phone in at any time over 24 hours a day to report spills, and there will be a comprehensive response to those spills and emergencies.

That, in a very generalized fashion, gives an idea to the committee that the ministry employs a blend of proactive and reactive means to protect the environment and also employs a blend of incentives, funding, technical assistance and disincentives through the enforcement-abatement modes.

A second theme I would like to leave with the committee, if I may, is that the management of Ontario's environment is a shared responsibility. Not only should the Ministry of the Environment and other government agencies, provincial, federal and otherwise, be responsible for our environment, but there are rights and responsibilities that must be borne by the private sector and all proponents.

1530

I would like to go to the Environmental Assessment Act right now for you. The Environmental Assessment Act came into force in 1976. It originally applied to the crown, provincial agencies, including Ontario Hydro, GO Transit, the Ministry of Transportation, Ministry of Natural Resources and others. It spread to the

municipalities later in the 1970s and early 1980s and to conservation authorities and has been applied on a selective basis to at least eight private sector activities.

The intention of the Environmental Assessment Act is to promote three things: one is good planning; two is informed decision-making, and, very important, three is the protection of the environment.

There are four or five key characteristics of the environmental assessment process as contained in the Environmental Assessment Act.

The first one is public involvement, and here we are referring to the many opportunities the public has to become involved at an early stage in a proponent's project proposals, whether it be a transmission line, a generating station or a minor waste management operation. We stress in public involvement presubmission consultation, which is the stage at which proponents do most of their planning and conceptualizing work, their systems analysis and so on. We have a policy on presubmission consultation which gives us the mandate, if you like, to require proponents to become fully informed and to inform and involve the public in the project as it proceeds and becomes more detailed just prior to formal submission of an environmental assessment.

The second key characteristic or feature of environmental assessment is the scope of the environment. Unlike the Environmental Protection Act, the Ontario Water Resources Act, we are looking not only at the natural environment—the air, land and water environment—but at the social, economic and cultural environment. That is what we call the full scope of the environment as defined in clause 1(c) of the Environmental Assessment Act.

The third key characteristic is that a reasonable range of alternatives must be assessed by proponents, such as Hydro, in their analysis and documentations.

A fourth key characteristic is the identification and analysis of net environmental effects, those which are left over after mitigation has been applied to them. This is where the agencies such as the Ministry of the Environment will examine their own policies and regulations criteria to see if the proposals are in conformance with them.

A fifth characteristic of the environmental assessment process is that there be clear, complete documentation which really wraps up the other four characteristics, and this is something which we often refer to as a traceable planning process that a proponent has gone

through in preparing the environmental assessment.

There are four major types of environmental assessments. The first type, which most of you are familiar with, is individual environmental assessments, which would be one specific project of a specific kind; for example, a generating station or a transmission line.

The second type of environmental assessment is a class environmental assessment, which is made up of undertakings which are of a similar type and have similar and predictable environmental effects that can be mitigated.

A third type of environmental assessment is the ability really to designate projects under the legislation which are not currently subject. The public and others have that opportunity to do so under section 40 of the Environmental Assessment Act.

The fourth type of environmental assessment is an exemption which is provided for under section 29 of the Environmental Assessment Act. There are guidelines being used by proponents that are currently being updated.

An exemption is granted mainly for three major criteria. One is environmental insignificance; two is the presence of an emergency situation; three is an overwhelming public interest.

I would like to highlight for you some of the elements of the environmental assessment process. There are at least five of them.

The first one is presubmission consultation. Proponents, in their preplanning, if you like, before they submit a formal environmental assessment to us, in preparing a draft and even before that in preparing their terms of reference, are required by policy to inform and consult with the public.

The second major step is the actual formal submission of an environmental assessment to the Minister of the Environment. This is done by proponents.

The minister then initiates the third stage of the process, which is the preparation of the government review.

The fourth stage of the process is the public notice of completion of the government review, wherein the public has 30 days to ask the minister for a hearing based on the acceptability of the environmental assessment or for an approval of the undertaking.

The fifth area is the actual decision stage, where there can be a public hearing required by the public of the minister under the Environmental Assessment Board or, in cases where

there are other matters to be dealt with, the consolidated joint board, which can involve members from the Environmental Assessment Board, the Ontario Municipal Board and so on.

Just a few words about the government review: It is undertaken by a number of provincial ministries. Many of you are familiar with them. There are at least 24 possible candidate ministries that may be commenting upon any given environmental assessment or class environmental assessment. That government review, with the environmental assessment, is put on the public record.

As I mentioned, the public has an opportunity to become involved in the review of the environmental assessment after the notice of completion is published and may make submissions to the minister for a hearing.

Most projects in the history of our act do not go to hearings. In fact, only between 10 per cent and 20 per cent of them have historically gone before the Environmental Assessment Board or joint board, but there are provisions in the Environmental Assessment Act that lay out the mandate, under section 18, for the composition and the matters that the board may deal with.

Where is the environmental assessment program going? Many have referred to the Environmental Assessment Act as the most comprehensive piece of environmental legislation in the world. Others have been less generous in their opinions about the legislation.

1540

The environmental assessment branch of the Ministry of the Environment, with the minister's concurrence, initiated this April an environmental assessment program improvement project. This is part of the ongoing review of the day-to-day operations of the environmental assessment program.

It has three major elements to it. One is a comprehensive review of the workings of the program and legislation. The second one is that the program improvement project is very consultative. It will be undertaken with the public and a number of advisory committees and interest groups. There has already been an opportunity for the general public to learn about this project through the month of June, when the members of the team went across the province to host at least eight open houses.

The third element of the program improvement project is a two-phased approach to improvements. The first phase is the short-term legislative and operational improvements which are intended to be completed by early 1989. The

second phase is a set of more comprehensive environmental amendments, changes to the legislation in early 1990, that will have taken somewhat more time because of their complex and perhaps controversial nature.

That gives you a general overview of what the Environmental Assessment Act is, how it operates and where it is going in the very short term.

How is Ontario Hydro subject to the Environmental Assessment Act? Ontario Hydro is subject to the Environmental Assessment Act in this fashion: all new facilities such as major transmission and generation facilities are subject to the legislation. It is subject through regulation 205/87. It is listed as a public body and its activities are subject to the act.

One of the members raised some questions about numbers of exemption orders and so on. There are a number of exemption orders in place for Ontario Hydro operations. There are about 33 exemption orders, the more recent ones with fairly extensive conditions imposed upon them. They cover such areas as the secondary uses of Hydro facilities and properties, remote energy facilities and property acquisitions. Through regulation 205, general operation and maintenance activities are not subject to the legislation.

There have been about 15 approvals under the Environmental Assessment Act granted to Ontario Hydro since the inception of the legislation, mostly transmission-related approvals. Twelve of those are individual environmental assessment approvals; three of them are class environmental assessment approvals. Two Ontario Hydro projects have gone to joint board hearings: the eastern hydro route and plan stage facilities and the southwestern hydro plan and route stage proposals, both approved.

There are currently six Ontario Hydro projects in presubmission consultation; a mix, really, of transmission and generation facility proposals. There is one Ontario Hydro project which has been formally submitted under the legislation. That is the flue gas desulphurization program, which Hydro is proposing in part to meet the regulatory requirements of the Countdown Acid Rain program, a comprehensive regulation which will reduce sulphur dioxide emissions in the province.

Regarding the working relationship with Ontario Hydro, the environmental assessment staff of the ministry has a good relationship with the environmental department of Ontario Hydro. We meet with representatives, senior managers from that operation on a monthly basis to review and

monitor projects. We feel that most of the environmental assessments received from Hydro have been quite thorough and complete, allowing public consultation to occur.

That gives the committee a summary of the ministry's activities and legislation and the environmental assessment process and how it relates to Ontario Hydro operations.

I have a number of closing remarks for the committee, if I may. The first is that the Ministry of the Environment wants to ensure that Ontario Hydro complies fully with all ministry regulations and acts; second, that any Ontario Hydro strategy for meeting Ontario's energy needs minimizes impacts on the environment. This may mean looking at other options such as the use of renewable resources and energy conservation measures, the demand side of the equation.

The third comment is that the environmental assessment process does provide a comprehensive environmental planning review and approval mechanism for undertakings, including Ontario Hydro's operations, with a number of opportunities for public involvement.

Fourth, as with the principles of environmental assessment, the Ministry of the Environment would like to ensure that comprehensive environmental planning review and approvals do occur with public consultation as early as possible in the planning of undertakings, including Ontario Hydro's facilities.

That concludes our submission to the committee.

Mr. McGuigan: A question that has come up a number of times in my riding from constituents has to do with livestock producers who allege that tingle voltage or stray voltage is affecting the health and viability of their livestock. What action, if any, would they get if they come to the Ministry of the Environment?

Mr. Veitch: Is this in relation to proposed or existing rights of way?

Mr. McGuigan: It is existing. They allege a tingle voltage or stray voltage is causing them losses in their livestock operations. Customarily they go to Hydro and run up against a pretty hard bunch of people on that one. Do they ever come to you or do you have a role in that business?

1550

Mr. McLeod: I guess where we would get involved in something like tingle voltage is normally, if there is a hydro transmission line running through an agricultural area—for example, southwest Hydro is probably a good case to look at—one of the concerns, of course

with cattle, and in particular cows, is that the tingle voltage tends to reduce milk production, as I understand it. I am not an agrologist. If that is a concern that comes up through the environmental assessment process—and usually we would see something like that pretty early on in the process, during presubmission consultation—that is one of the things we would bring forward to Ontario Hydro. We would ask, "How are you going to deal with this?" Then they have standard processes that they use for grounding out the voltage to prevent any harm.

Mr. McGuigan: I am talking about lines that already exist, and often they are way out in the country, a long way from high-tension lines, and still these people allege that the problem is due to stray voltage. Do they come to you? Do you have a program whereby you go out and do testing and so on?

Mr. McLeod: Not as far as I am aware, no.

Mr. McGuigan: It is largely then a case between the farmer and Hydro itself rather than between Hydro and the Ministry of the Environment.

Mr. McLeod: Yes, or a local utility, I suppose, if it is not Hydro.

Mr. McGuigan: Do you have a mandate in that area, if a farmer comes to you and says: "Hey, you people are responsible for the environment. Get out here and do something"?

Mr. Veitch: Perhaps we do through the Agricultural Code of Practice. The Ministry of the Environment is one of the parties to that code and could have a role, but I would think it would be largely Ontario Hydro's responsibility, perhaps involving also the Ministry of Agriculture and Food. Our role would be an indirect one, if any.

Mr. McGuigan: The reason I ask the question is that I have had some experience in this area, and it seems to be the farmer versus Hydro. He does not get much help other than that. I am just wondering whether in parts of the country you consider that as part of your mandate. I guess the answer I am getting is it is not.

Mr. Veitch: Not directly.

Mr. Runciman: I had a bit of a problem with Mr. McGuigan's question. Who carries out the research for the ministry? In things like what Mr. McGuigan was talking about, I think there was some study in New York state recently where people living within a certain distance of a hydro transmission corridor were being subjected to some apparently very real health hazards, as that

study determined, in any event. I am just wondering who does research on things like that.

I do not know the chemical that is being sprayed by Hydro on the transmission corridors; 2,4-something, whatever it is. It is causing suspicions that it is a cancer-causing agent. It is being used extensively by Ontario Hydro in spraying around the corridors.

Do you have to depend on other agencies to bring this information to your attention or do you have your own research arm? How do you go about it?

Mr. Veitch: We do depend on other agencies. We use the Ministry of Health, for example. We have the hazardous contaminants branch, and we do administer a Pesticides Act, which deals with herbicides and pesticides and their proper handling, storage and use.

I understand that Ontario Hydro is doing its own studies of health effects of high-voltage transmission lines, and that may be a good question to ask it specifically. Our technical people may be involved in a consultative way with Hydro. I understand there will be, perhaps later in the committee's meetings, some technical representatives from the ministry to speak to some of the other matters under the Environmental Protection Act and the Ontario Water Resources Act, which may be useful for the committee as well.

We also have a number of pieces of information we would like to leave with the committee, if we could. We have a sheet on Ontario's environmental legislation, which expands a little bit upon the legislative requirements of the ministry. We have a background on MISA, which is the municipal-industrial strategy for abatement program, which gets at some of the water-related aspects of industrial/municipal discharges. We also have some literature on the Countdown Acid Rain program, which I think some of you are familiar with.

Mr. Chairman: Perhaps you could give those documents to the clerk. She can make them part of the record and distribute them to the members.

Mr. Runciman: I have a few more questions. I am just curious about acid rain emissions from the coal-fired plants and Ontario Hydro's commitment to significantly reduce its acid gas emissions over a period of time. In this past year we saw more coal-fired units come on stream. One of the mothballed plants in eastern Ontario was fired up. I am just wondering if the Ministry of the Environment gets involved in those kinds of decisions which seem to contradict your commitment to reduce acid gas emissions.

I am trying to see what relationship it has in terms of exports of hydro. Ontario Hydro is exporting to various jurisdictions, and I have to wonder, just sitting back, whether indeed it is necessary to put more coal-fired generating facilities on stream if we are indeed exporting to other jurisdictions.

I am not sure, but I am wondering if you take a look at the possibility of reducing exports, which I realize could have an impact on rates in this province. Rather than putting those additional facilities on line, would it not be wiser, in terms of the environment in any event, to simply reduce exports? Do you look at that question?

Mr. Veitch: Hydro, from our understanding, remembering that we are from the environmental assessment side of the ministry and your questions should probably be directed to the people in the ministry who are administering the acid rain program, we would not likely become involved, speaking from the environmental assessment point of view, with a startup operation if the use, purpose, location or capacity of the facility did not change from its original intent, such as a mothballed coal-fired generating station. I understand that Hydro is required by our regulations to meet certain loading reductions, and certainly Hydro would have to consider that in opening a new operation. As we mention in our conclusions, we are certainly supportive of a strategy adopted by Ontario Hydro that would minimize impacts on the environment.

Mr. Runciman: In any event, as far as you are aware, you are not getting involved in those kinds of decisions. The ministry would not be suggesting to the corporation or the government, "Look, let's reduce our export sales and keep that coal-fired plant off line."

Mr. McLeod: Maybe I can add to that. Directly related to exports, it is difficult for us to get involved with exports in that really, because that is outside of some of the things we would look at specifically in terms of international trading of energy and stuff like that. Where we would get involved is in new generation, for example, a new proposal. We will ask, during the presubmission consultation process, Ontario Hydro to look at such things as conservation, which may include some form of demand management which it would have to justify.

Mr. Runciman: I appreciate that. I do not want to prolong this. I appreciate that in terms of new facilities you are going to be playing that role. I was just trying to minimize the role that coal-fired stations have in the whole picture and

talking about whether you enter into it at that stage.

The minister yesterday indicated to us that he is looking at about an 18-to-24-month time frame in terms of reaching a decision about the commitments. How does that fit in with your ministry in terms of, if the minister, the government and Ontario Hydro make a decision a year and a half to two years from now that another major nuclear facility is the way to go, what kind of time line are we looking at to go through all of the approval stages with your ministry?

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Mr. Veitch: It could vary. The time line for a nuclear generating facility, for example?

Mr. Runciman: Yes.

Mr. Veitch: Just as a ball-park estimate. I would think that Hydro would be looking at some fairly extensive presubmission consultation, which could take several years, and a formal government review would certainly take the better of nine to 12 months. If there is no hearing, there could be an approval six months after that, assuming the best case, so you are looking at several years. I would not want to put an exact number on it.

Mr. Runciman: Does that preclude the corporation from putting a shovel in the ground for a period of years? Is that what you are suggesting?

Mr. Veitch: Yes.

Mr. Runciman: We are saying that the minister is talking about it taking, at the outside, two years before they make a decision which way they want to go, and then we are looking at another two or three years before final approvals are granted. We are talking, at the outside, possibly five years before construction can begin. As I understand the comments that were made earlier, we are looking at a 14-year process. I do not know whether that includes the five years you are talking about. Maybe it does.

Mrs. Grier: Five or six. It does.

Mr. Runciman: Five or six years. If it does not, we are looking at about 19 to 20 years before a plant would be fired up. Amazing.

Mr. Chairman: Mr. McGuigan has a supplementary.

Mr. McGuigan: Just to shorten that process, in the event that we went for another nuclear station, how would the Ministry of the Environment react if Hydro came to you and said, for instance, "We might want another nuclear plant

and we are looking at two or three sites, we want to hold an environmental assessment on the possibility that we are going to some day put up a nuclear plant"? Would you put your whole motion into gear on that sort of iffy proposition, or would you say, "No, we won't do anything until you have positive plans."

Mr. McLeod: The idea of banking on approval ahead of time?

Mr. McGuigan: Yes.

Mr. McLeod: I think it is something we would certainly consider. The Ministry of Transportation has done that in the past, and it is acceptable. It depends on the time frame.

One of the things we have to consider too, based on location, is what is going to happen to the environment, how much it is going to change over that period of time. If they get an approval now and they are not planning on building for, say, 20 years, what sort of changes to the environment can we expect?

There are other options that would be worth looking at, such as interim updates of data as the time approaches for the project to begin. I think the process is flexible enough to allow a creative method for dealing with the long-term process I would expect this thing would probably go through. That would include the hearings.

Mr. McGuigan: Within that context, could you sort of give the committee an idea, if that happened, whether you are taking a big risk that the environment would change in, say, eight or 10 years?

Mr. McLeod: I would probably say yes, if it was in southern Ontario or southwestern Ontario.

Mr. McGuigan: Yes, it would change.

Mr. McLeod: Yes, because with the growth and rate of development, there would be significant pressure on lands and things like that. In northern Ontario there might be a lesser degree of pressure, given its location. I think location is one of the key areas we would have to look at.

Quite often we have found, though, with highways and proposals such as those in southern Ontario, with the boom we have recently been going through, it is creating more pressures at a faster rate than we probably expected. The same kind of thing happened in the 1970s and sort of caught us too.

Again, it is something we would certainly entertain and look at and consider.

Mr. Chairman: Perhaps I can put you on the list, Mr. McGuigan, since Mr. Runciman did have the floor.

Mr. McGuigan: Yes.

Mr. Runciman: Just a couple of quick questions. Was the Darlington site—and there were only four units constructed or under construction—given approval for the eight units so that you would not have to go through the approval process for any further growth at Darlington?

Mrs. Grier: An exemption.

Mr. Runciman: Was it given an exemption? Would Hydro have to approach you at this stage or is that already fair game for them?

Mr. McLeod: As I understand it, there is only approval for a certain size and I think it is 4,800 megawatts, which is Darlington A. If there was a Darlington B, they would have to go through the EA process.

Mr. Runciman: It would have to go through the process?

Mr. McLeod: Yes. That is if there were an agreement, of course, between the province and the federal government.

Mr. Cureatz: Can I have a quick question? They would not have to go—

Mr. McLeod: Yes, they would have to go through the EA process and that is also dependent on the agreements between the province and the federal government as to which parts of the plant are covered under EA and which other parts of—

Mr. Cureatz: It would have to go through an assessment?

Mr. McLeod: Yes.

Mr. Cureatz: Just one quick one. If the size of the reactors were larger—my understanding is that they are developing a larger reactor. I guess if you are going through the process, that would be taken into consideration.

Mr. McLeod: Yes.

Mrs. Grier: Can I have a supplementary on that, Mr. Chairman?

Mr. Chairman: Just a short one. Poor Mr. Runciman is getting interrupted all over.

Mrs. Grier: Just in response to the answer that there would have to be an EA process for Darlington B, given the exemption and the exemption for the tritium removal facility, is there not a danger—in my mind—that exemption would be broad enough to exclude Darlington B, or can you categorically state that there would have to be an environmental assessment approval for Darlington B?

Mr. McLeod: If you give me a minute—I brought the exemption order with me because I

knew this was going to come up—I will have a look at it.

Mr. Runciman: While we are waiting, I have one little question that perhaps the other gentleman can respond to. This may not have a significant impact on Lake Ontario or other bodies of water, but I have read something about it in the past and that is the warm water effluent from a nuclear station. Has the ministry assessed the impact that has over a period of years on the water temperature of the lake and whether that is indeed significant on nature and could have a negative long-term impact on the quality of the lake and fish inhabiting the lake and so on?

Mr. Veitch: I am afraid I cannot help you with that one. That is one you will have to address to our technical water resources people.

Mr. Runciman: They are appearing before us?

Mr. Veitch: I understand they are, yes.

Mr. Runciman: OK.

Mr. Chairman: Do you have the answer to Mrs. Grier's supplementary?

Mr. McLeod: I do. The description of the undertaking is very clear. It includes the program of planning, designing, constructing, operating and maintaining a 3,400-megawatt nuclear generating-station project on the Darlington site. If they can build one generating station that has the capacity of 3,400 megawatts, then it is covered. If they build another station that increases that, then it is not covered. I am not a lawyer. This, of course, is all open.

Mrs. Grier: That is very clear. I do not hear tritium removal plants included in there. If it is broadened to include that—

Mr. McLeod: It is broad.

Mrs. Grier: It is broad. Thank you.

I wanted to get some comments from you on the ministry's response to DSPS. If you are not the appropriate people to ask about that, perhaps you should say so.

Mr. McLeod: We can answer some questions on it, I think.

Mrs. Grier: OK. I was interested in the comments from the Ministry of the Environment on DSPS and particularly the fact that you pointed out that sustainable development was not part of Hydro's goal or mission statement and that you felt that was something to which the ministry at least was committed. I am wondering about the other part of the Brundtland recommendations, which of course have been accepted by the government, which is the integration of

economic decision-making and environmental decision-making.

I guess I have two parts to that. How do you see that occurring during the process of approval of Hydro's planning over the DSPS and then into the option study? And while I agree that there needs to be integration of economic and environmental decision-making, I worry somewhat that when you do that, you are also at the same time making it more difficult for the Ministry of the Environment to do an objective, arm's-length review of the project, if you are involved in the decision-making at the very beginning.

How do you reconcile those two things as a ministry? How do we reconcile your obligation to review objectively projects and decisions and the desirability of having environmental decision-making closer to economic decision-making and part of the planning?

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Mr. McLeod: I guess that is a difficult thing that we run into in virtually every environmental assessment we carry out.

One of the best descriptions of the role we play is that of a facilitator. While we are not and do not profess to be economists or agrologists or any number of other things, we are generalists who have a particular expertise and skill in the area of environmental assessments, so we can speak in a general way. I guess we are there to help trigger discussion and inclusion of economic factors into the decision-making portion of projects.

At the same time, we also encourage the different ministries, agencies and the public, who participate in the entire process, to also give consideration to those kinds of things as well. There is a full sharing of information, as much as possible, to try to integrate those activities and areas of interest into a proponent's project so that we can get the best advantage for everybody out of a project.

Mrs. Grier: All right. So you are involved in the very beginning. You are part of the planning process. You are part of the tradeoffs that inevitably occur as the planning proceeds.

Mr. McLeod: As advisers in that process, yes.

Mrs. Grier: When the decision is finally made as to what route to go, how then do you change hats and become the objective evaluators of the project?

Mr. McLeod: One of the key things we are very careful to do is not to take sides in the process. As I said, our job is as a facilitator, an adviser to the process. We are sort of the key

body to help make it work. We leave presubmission consultation up to the proponent. We encourage it and we also encourage the ministries and the public to get involved in that process—we cannot tell them what to do—and we advise them as to the requirements we have for submitting an environmental assessment under the act. We advise people how our process works and then we carry out that review process when we get in. I guess this may be where you are linking the changing of hats into having the experts in those areas review them and make comments back as they see it.

When it comes to weighing advantages and disadvantages of different alternatives in the planning process that a proponent has for a project, when it is looking at different aspects of the environment, we do not get involved in that specifically. It is not our job to go in there and sit on the project teams, for example, and participate in the weighing of advantages and disadvantages. That is not our job. But we are there to help lend assistance, provide information and guidance leading to the ultimate decision that the proponent makes himself.

Mr. Veitch: It is important to recognize too that, as Mr. McLeod said, we are the facilitators of the process. We are not the decision-makers. The minister is the decision-maker of the board. We are primarily there as facilitators of the process to ensure, to the fullest extent we can, that the proponent complies with the administration of that process.

We mentioned some of the factors and some of the elements of that process that we look for. The government reviewers each have their own interests to protect in commenting on the environmental assessment documents, so really there are many actors throughout the whole exercise. The ultimate actors are the minister, the board and cabinet.

Mrs. Grier: The fact that there are so many actors is, of course, one of the reasons often given by proponents for wanting exemptions and avoiding assessment, because it takes so long. As one who wants to see the most thorough environmental review, I am also conscious of the fact that has now become, in some people's minds, an impediment to some of the things I would like to see Hydro do, such as expediting coal generation, small-scale hydro or some of the options, other than another nuclear plant, that some of us feel are more economically viable.

How do you see your ministry working with Hydro to facilitate those more flexible options and to avoid the argument being given by Hydro

that it cannot get into that because it will take too long or industry is not prepared to go cogeneration because of the hassles of environmental assessment?

Mr. Veitch: I think the answer to that is that we already have a process in place, with the Environmental Assessment Act and program, that does provide the comprehensive review, the environmental analysis, the public consultation at an early stage, formally. It is through vehicles such as this committee, the Porter royal commission and other vehicles that we have participated in sharing our views on ensuring that the elements of an EA process, even if you are not applying a formal mechanism, do get considered.

Mrs. Grier: In your comment on DSPS, one of the things I find interesting was the one sentence, "Some elements of demand management could be made mandatory." Could you expand on that?

Mr. Veitch: This would be for, let's say, a Hydro facility. One of the things that we examine is a reasonable range of alternatives to a Hydro operation, a coal-fired generating station, for example. Certainly one of the functionally different alternatives that Hydro has at its disposal is looking at the demand side of the equation and looking at reasonable options for energy conservation as ways to meet the same targets.

Mrs. Grier: The third point you make is the difficulty of cost-benefit analysis when we are into the comparison of the various options. What progress do you see your ministry making or what projects are under way to perhaps get a better handle on that as we go through this planning process with Hydro? How do you see yourselves contributing to making sure that the full environmental impacts are as quantified as they possibly can be?

Mr. Veitch: One of the key things we try to do in cost-benefit analysis, and that has a wide range of definitions, is ensure that the ministries and agencies that have specific interests in whatever the cost-benefit analysis is studying participate in that exercise.

A cost-benefit analysis that is carried on by Ontario Hydro, for example, is one that obviously is done internally by the organization. Now if that is to be tested, we have an economics group in our policy and planning branch which, upon our request, will do a certain amount of work where that work affects the mandate of our ministry. Where it goes beyond that, then we rely

on agencies like the Ministry of Treasury and Economics and other ministries to provide an appropriate analysis.

If there is nothing, they have no comments in a particular government review, then that is their position and they are prepared, obviously, to stand by it if it goes before a hearing.

Mrs. Grier: I have one final question, on a different topic, if I can. What role does your ministry play in the whole issue of nuclear waste? We heard about Atomic Energy of Canada Ltd. and its obligation to license nuclear plants, and I know it has traditionally been seen as a federal role, but as we begin to look more carefully at the costing and the disposal of nuclear waste in our evaluation of the nuclear option, where does your ministry come in, or does it?

Mr. Veitch: We view it as mainly a federal responsibility, but our ministry has always been available in an advisory capacity to assist the federal government in looking at reasonable and effective ways to deal with low-level radioactive nuclear waste.

Mrs. Grier: What about high-level, spent fuel?

Mr. Veitch: And high-level.

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Mrs. Grier: If we are trying to ascribe some costs to the waste disposal issue in evaluating the nuclear option, are you telling us that for information and data on that we go exclusively to the federal level, not to you? That is where the responsibility lies?

Mr. Veitch: That is where the major responsibility lies, yes.

Mr. Charlton: May I ask a supplementary on that? There are a number of federal jurisdictions on environmental matters. For example, the federal government approves the import of a whole range of chemicals: chemical sprays, insecticides, pesticides and so on. That does not remove from the province or the provincial ministry the authority to say, "You can approve it for use in Canada, but we're going to ban its use in Ontario."

Are you essentially telling us that if the Atomic Energy Control Board approved, and the federal government accepted, a nuclear waste disposal plan—which affected Ontario because it was in Ontario—that was unacceptable environmentally, your ministry would have no role in that question?

Mr. Veitch: I think it comes down to a jurisdictional matter, one on which we found ourselves before tribunals in the past. It can

really be challenged legally, but I guess our bottom line is that we are always there as technical advisers, but we would like to try to ensure an equivalency of environmental standards in this province that may be approved by a higher authority such as a federal regulatory agency or board.

Mr. Charlton: My understanding was, and still is for that matter, that where environmental standards are concerned, the province has the authority to set its own standard, which can be greater than a federal standard. Are you, in effect, telling me you do not have that same authority with nuclear wastes?

Mr. Veitch: I cannot give you a direct answer to that. I think this is really a question you should be asking the ministry's technical people. If you can wait for a few more sessions, I will record it and they will come back ready to answer your question.

Mrs. Sullivan: I had questions that also related to the Ministry of the Environment in relation to DSPS. I note that in the ministry's response, the ministry points out that Hydro has identified three alternatives for obtaining approvals under the Environmental Assessment Act. Approval banking was one of them, the separate approvals of environmental acceptance and need, and combining approvals for generation facilities and transmission facilities.

I felt that the Ministry of the Environment, while it was saying that Hydro was unclear in its proposal, was also unclear in its response. I wonder if you could tell me how the ministry would work with Hydro in terms of coming to a conclusion. What sort of discussions would be held? Would you expect them to put formal proposals forward or would there be discussions that would take place as a part of the DSPS analysis?

I really thought that the response here was, "Come on back to us and we'll see what we can do." I thought you could have been a little more open and positive when in fact we are really trying to make a push for different kinds of approaches to generation and demand strategy.

Mr. Veitch: Certainly, the ministry is open to continuing further discussions with Hydro on the demand/supply strategy paper. We understood that was the beginning and we would certainly continue to work with them to advise them on our views, as we have always done in the past.

Mrs. Sullivan: But is there a formal interaction, a formal mechanism that would continue between the Ministry of the Environment and

Hydro? How would you advise them of the kinds of routes that you see as favourable routes? Would that information, for example, ever come back before this committee?

Mr. Veitch: As I mentioned earlier, we have a monthly ministry-Ontario Hydro liaison committee that meets to deal with upcoming issues. The demand-supply strategy issue is certainly one that can come before that group, so I guess the answer is that there are mechanisms in place that can deal with what I think you are getting at. They have worked well in the past for us and I think they can work for us again.

Mr. McLeod: A lot of us are aware that the environmental assessment process has come under criticism for apparently taking too long to get projects through and costing too much money. One of the things we are constantly looking at is different ways of trying to be a little bit innovative and creative about how we deal with EA projects. If there are some good, solid proposals that we can work out with Ontario Hydro when it comes to banking approvals or combined approvals or planning approvals, then we are more than willing to entertain those things.

One of the things I guess we need to do is sit down with Hydro and explore further its proposals that have shown up in DSPS. Some of them are new; some of them we have had some preliminary discussions on in the recent past through our liaison committee. That is one of those things we are certainly conscious of that needs to be addressed.

Mrs. Sullivan: I am a strong proponent of the environmental assessment program, but I am extremely frustrated with the process. My riding has two dump sites that are both being evaluated in a consolidated hearing. You will know which one that is.

The second thing is more of a speculative question. Presuming that the private sector is convincing and spawns a major new industry in power generation, private power generation, what would be the process relating to environmental assessment for the private sector generator?

Mr. Veitch: The minister, in reviewing that proposal, could designate the project, subject to the Environmental Assessment Act. There could also be a possibility of the public becoming involved in a proposal like that and requesting the minister to designate the project, subject to the act. Certainly, the private sector is an area that our EA program improvement project is looking at very carefully.

In the last year, we have brought in a number of waste management facilities that you are aware of. Energy-from-waste facilities burning more than 100 tons of domestic garbage a day are now subject to the legislation. I think the idea of equivalency, whatever is subject in the public sector, may one day be fair game in the private sector, so there is always the possibility of designation on a case-by-case basis.

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Mr. M. C. Ray: My questions relate to the one that has been raised here a number of times, the delay and expense in the environmental assessment process, but in the context of what you mentioned was your environmental assessment improvement program.

I would like, first, to suggest that it is not just the environmental assessment process that bothers people. It is the fact that it was superimposed on a complicated approval process that already existed before the Environmental Assessment Act was passed; that is, the planning process, the land expropriation process. You have a multiplicity of hearings, a multiplicity of approvals and a multiplicity of criteria that are all applied to the same project and there does not seem to be any Ontario government co-ordination in response to that except the consolidated hearing board process, which is not complete because it does not include all the types of hearings and criteria that are required.

Is that under review and consideration within the Ministry of the Environment under this environmental assessment improvement program you have? Is it wide enough in its review of what is going on in the approvals network to encompass more than what you are engaged in, which is the environmental assessment approach?

Mr. Veitch: Yes, it is. The environmental assessment program improvement project will be looking at how the Environmental Assessment Act relates to other statutes like the Expropriations Act, the Ontario Energy Board Act, etc. That is part of the terms of reference for the project. As I mentioned, it will likely be one of the second-stage analyses that will be undertaken for 1990.

Mr. M. C. Ray: We here sit in one capacity, looking at Ontario Hydro and its facilities, its transmission lines and nuclear plants. In the approvals process in that context, that is a corporation that has corporate counsel and expert witnesses and can afford all the hearings process no matter how long it takes. On the other side of some of these projects are citizens who do not

have the resources, the capacity and the knowledge, even, to object.

I would like to know what involvement the citizens have in your environmental assessment program to accommodate their difficulties in a process that hangs over their heads for as many years as it does for the proponents who are frustrated by the costs and expense.

Mr. Veitch: Are you talking about the program improvement project or the actual program—

Mr. M. C. Ray: Who are you soliciting input from as you consider the impact of the environmental hearings process? I do not know what is involved in this program. Who is getting input into telling the Ministry of the Environment what is wrong with the current system?

Mr. Veitch: Everyone who has an affected interest. I will explain that. The first phase of the project is that we have gone out through eight public meetings across the province, in Thunder Bay, Toronto, Chatham, etc.—and prior to the public notice of those meetings, prior to the meetings, there has been a presentation about the program soliciting public views, with the possibility of numerous other opportunities as well.

As I understand it, the public will have an opportunity to review a discussion paper and/or working papers dealing with short-term legislative and operational improvements later this year. Later next year, they will also have an opportunity to review a series of more complex, medium-term improvements, legislative and otherwise. There will be quite an opportunity for public involvement.

In addition to that, there have been a number of committees set up. There has been an advisory committee of affected interests that includes, for example, the Federation of Ontario Naturalists through to the National Solid Waste Management Association (Ontario), the Association of Municipalities of Ontario, etc. We also have an interministry liaison committee that is looking at the government perspective on trying to improve environmental assessment, so it is quite broad and quite consultative.

Mr. M. C. Ray: Are they looking at consolidating the legislation?

Mr. Veitch: Yes.

Mr. M. C. Ray: Into one or as few as possible pieces of legislation with similar criteria?

Mr. Veitch: That is certainly an option. They are looking at how the act affects other statutes.

Mr. M. C. Ray: Like the Ontario Water Resources Act requirements? Is that included?

Mr. Veitch: All other statutes that the act affects will be examined to look at opportunities for improvement, yes.

Mr. Chairman: Mr. Cureatz.

Mr. Cureatz: My question was answered when Mr. Runciman was speaking about exemption for Darlington and Darlington B.

Mr. Chairman: Mr. McGuigan, I sort of cut you off when you were asking supplementaries of Mr. Runciman. Did you have anything further to ask?

Mr. McGuigan: No; it has been answered.

Mr. Charlton: I just have one question. You have it clearly established now, both in your minds and in Hydro's mind, that the next nuclear plant will be subject to environmental assessment under the act. Will that requirement include a requirement to submit an acceptable plan for decommissioning of that plant, or subsequently, if the answer to that question is no, will the eventual proposal for decommissioning of the plant be subject to the act?

Mr. McLeod: We have discussed that. We have not come to any conclusions on it yet. We have had just very preliminary discussions with Hydro on decommissioning generating stations in general, and then focusing, obviously as well, on nuclear plants.

I expect it would be reasonable to have some sort of decommissioning paper or addition to environmental assessment that would cover that thing. We have not had a generation project go through the full environmental assessment process yet. Little Jackfish, a proposal north of Lake Nipigon, will be the first one. That is part of the discussion that is included in that, so I think it would be reasonable.

Mr. Charlton: There is no definitive answer at this point?

Mr. McLeod: No.

Mr. Chairman: Are there any further questions? Seeing none, I would like to thank Mr. Veitch and Mr. McLeod for coming and discussing the Environmental Assessment Act and so on with us this afternoon.

This being the end of the business for the day, is there any other business that anyone would like to bring up at this time? Then I would just like to remind the members there will be a brief in camera meeting at 9:45 a.m. tomorrow. It will be in committee room 2 downstairs. I will adjourn the committee until 10 a.m. tomorrow in this room.

The committee adjourned at 4:40 p.m.

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Legislative Assembly of Ontario

Select Committee on Energy

Electricity Demand and Supply



First Session, 34th Parliament

Thursday, August 4, 1988

Speaker: Honourable Hugh A. Edighoffer

Clerk of the House: Claude L. DesRosiers

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Thursday, August 4, 1988

The committee met at 10:14 a.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY (continued)

Mr. Chairman: I call the meeting to order. Just before we turn the meeting over to Ontario Hydro, I want to indicate to the members what is in the package of materials before them. There is a binder of material which is what Hydro will be dealing with today. You also have an updated agenda for the committee hearings these next couple of weeks. We have an updated request for presentation and then there is the Hansard of Tuesday's meeting.

Today and for the next few days, Ontario Hydro is going to be providing us with a summary and a presentation relating to the demand/supply planning strategy document. The agenda sets out how they are going to do it and what subjects they are going to be dealing with. This morning, they propose to speak about chapters 1 to 6 of the DSPS.

What I propose to do is to turn this over to Ontario Hydro. For the benefit of Hansard, perhaps you could introduce all the people who are at the table and who will be speaking so they can get that down. Maybe you could introduce them now so they can get it in their notes. Then, if they have particular parts, perhaps they could be introduced later as well.

ONTARIO HYDRO

Mr. McConnell: On my far right, we have Ken Snelson, who played a major role in the drafting of the document. We have Art Marriage, who is the director of the system planning division. On my left is Mitch Rothman, who looks after our load forecasts; he is the director of economics and forecasts. My name is Lorne McConnell and I am the vice-president in charge of corporate planning. I was proposing to kick off the presentations.

Mr. Chairman: All right, and I believe you would like to do that from up front, so I will move to another part of the room and allow you to proceed.

Mr. McConnell: I am proposing to present chapters 1, 2 and 3 and then stop at that time to give you an opportunity to ask questions. Chapter 1 is an introduction. Everything we are

presenting to you today is essentially in this document. We are trying to cover the high spots through our presentations. In essence, this introduction is: Why did we undertake the demand/supply options study to begin with?

For the moment, if I can take you back to 1984, if we take a look at the status of the power situation of Ontario Hydro in 1984, at that particular time we were in an oversupply situation. That is to say that the capacity or the resources we had were greater than the loads we had at that time. We were taking advantage of this by selling the surplus we had for profit, making money in sales to the United States. Also in 1984, you will recall, we were just coming out of the 1982 recession.

At the same time, those of us who were engaged in planning could foresee that by the late 1990s we would have a need for committing new resources in order to meet needs then. That was a very difficult challenge, to have a mood in the public when we had a surplus, when we in planning were talking about looking forward into the future, talking about the need for putting new plans into place.

In any event, we were not in an urgent situation and it provided us an opportunity at that particular time to pause and rethink how we would go into the future. We wanted to have the best approach to meet the future. It was on that note that we decided in 1984 to undertake a comprehensive review. In this comprehensive review, it was foremost in our mind that we wanted to look into the question of demand options in much greater detail; that is to say, the kind of things that have been talked about here of working with the consumers or customers in terms of electrical efficiency and the like.

Also in terms of the supply options, we wanted to take a fresh look not only at the conventional things we do, such as hydro and nuclear and coal, but also at options like solar, wind and waste and that sort of thing. We called this study at the time the demand/supply options study, and the purpose of it, therefore, was to meet the electricity needs in Ontario for the 1990s and beyond in the best possible way.

A part of the spirit that was associated with undertaking this demand/supply options study was not for Ontario Hydro to work in splendid

isolation. We really wanted to have a very heavy involvement on the part of the public. That was a designed part of the approach we took to the demand/supply options study. We wanted the public to tell us about their preferences and we also wanted to find out what their values were, particularly relating to the supply of electrical service.

Those we involved were the Legislature, the government, all kinds of customers, the municipal utilities through which we deliver our power, electrical associations, special-interest groups and the public.

In 1985, our development of the demand/supply options study was temporarily interrupted. A decision was made by the Legislature and government to conduct a Darlington hearing in terms of the need for Darlington. So we redirected our staff efforts to work with the select committee in the later part of 1985, and it was during that hearing that we introduced to the select committee the information that we had this demand/supply options study under way. The select committee was quite interested in our study and we were requested to appear before the select committee in the spring of 1985. At that time we introduced the work we had done up to that particular time on the demand/supply options study.

I might say, in all sincerity, that we found that not only the report developed by the select committee at that time but also, and perhaps even more so, the dialogue we had with people was particularly useful. I think you will see in the draft strategy we have developed that it reflects a lot of the thoughts that were put forward by the select committee at that time.

1020

I would like to talk for a moment about the demand/supply planning strategy, which of course is the focus of this hearing. Of course, the demand/supply planning strategy is a part of the demand/supply options study. In essence, it is the product, if you wish, of the demand/supply options study. It is not something different. It is just the final product that has come out of the study. It is a strategy which contains principles, it contains guides and it contains some priorities that are related to helping to make the right development and the right selection in the future in the development of plans related to the demand options and the supply options.

Of course, the application then is that we would use this strategy to develop the definitive plans in the future. Our objective today, in talking to you, is to explain a bit of the

background of why the strategy is the way it is. If we appear to be a little bit defensive in talking about it, it is because we believe in what we have developed.

At the same time, I would like to emphasize, as Mr. Franklin did the other day, that if we do show a little defensiveness, not only are we willing to change it but we expect that we will be changing it, based on the comments that we get. Anything that you tell us about where you are in agreement with it will give us confidence. Anywhere you suggest improvements will make it a better strategy in the future.

Just looking at it from a point of view of a picture of what the demand/supply planning strategy is, the Ontario electric system comprises what we call the bulk electricity system. The bulk electricity system has two major components to it: bulk generation of electricity and bulk transmission of electricity; that is, carrying the power around the province. Then, of course, that power has to be distributed to all of the numerous consumers throughout the province. That is the retail system.

This system here is operated by Ontario Hydro. In this system, there are 315 municipal utilities that form a part of the retail system, with which we have to work closely, but also Ontario Hydro does a part of the distribution in that it runs the rural system and it also delivers power to some 100 major industrial customers. Of course, most important, the reason we exist is to supply power to the various consumers throughout the province.

We also have the option—and the arrow is going the wrong way here—of buying power from either private generators in the province or neighbouring utilities, and we also have the option of selling power to our neighbours. The focus of the demand/supply planning strategy is on generation and its alternatives. One alternative is to purchase from private generation and from neighbouring utilities, and the other focus is on consumption; that is, making that more efficient. That is what the demand/supply focus is on.

Normally, I have been taught—and I know there are some teachers in your group—that you should always say what you are going to do rather than what you are not going to do, but we have had so much trouble with people misunderstanding the intent of the demand/supply planning strategy, I would like to emphasize some of the things that it is not.

It is not a definitive plan. We are not telling you what power plants we are proposing to build

where and when. If there is any doubt in your mind, we have not as yet proposed to build another coal-fired plant or another nuclear station or anything that is major.

It is not a document that is attempting to communicate how Ontario Hydro should do its planning. That is a very complex and large subject. We got a little bit of information in the document by way of background, but it was never intended to be a description of how to do planning. Of course, that is a dynamic process. It is changing all the time.

It is not dealing with the retail system and it is not dealing with the transmission plan, except in the context that we had to include some transmission to the extent of integrating the generation, but that is the only part of the transmission that we intended to embrace.

Of course, it is not an option delivery plan. We are not saying here how to try to build power plants or how to go about a detailed execution of bringing about demand-management options, but we do provide some background in those areas.

We suggest that you focus on what it is and what it is not, but those were just intended to be a few cautions.

In terms of the demand/supply options study as a whole, we started in September 1984. The first thing we did was identify all of the options and we characterized all of the options in terms of cost and their social impacts.

Then we went out to the public and had a major review—and we will be telling you more about what we did during that major review—and we developed the demand/supply planning strategy and that was issued in December 1987.

Of course, we are in phase 3 here now in appearing before you. We have a target to have this phase ended in December 1988, assuming that you folks issue your report in December 1988. Then we would propose to finalize that strategy in early 1989. That would be our fourth and last phase.

Just as a comment on the future, we will of course be annually producing definitive plans and it is there that we would apply this demand/supply planning strategy in developing those annual plans. Those annual plans will include work on existing supply facilities. For example, we have many plants that are over 50 years old and they are not in very good shape. We have to replace them or redevelop them or do something with them.

It will include the committed and uncommitted demand management. That is to say, we will be

definitive in terms of those plans, identifying what market they apply to, whether it be the industrial market or the residential market or the commercial market. It will be definitive in terms of the segment of that market. For example, in the industrial market you could talk about mining. We will be definitive in terms of what kind of a program we are talking about, whether it is electrical efficiency or power shifting and so on.

In terms of nonutility generation or independent generation—it goes by many names; parallel generation—we will have both those existing resources that we have in that area, those we have made firm commitments to and forecasts of further capacity we had forecast we would be able to make deals with. We will go over the committed supply facilities, and then of course the uncommitted supply facilities. They will be partly defined and partly undefined during the forecast period.

Moving on then to review approvals of plans and projects, it is Ontario Hydro's intent to continue with the public consultation. We will be giving you examples of what we have been intensifying over the past few years. We have every expectation that we will be required to go through major project approvals and will be reinforcing that it is not only a matter of a requirement that we go through it in terms of provincial and federal acts, but we also desire and want to go through it. It is the best way for us to get our job done, to be able to clear the air, so that is a very willing act on our part, as well as being compulsory.

In terms of the review of plans as distinct from major project approvals, we expect that from time to time processes will be established by the Legislature and/or by the government to review the plans we have, just as we are appearing before you today. Of course, in terms of developing a 1989 plan, we have that scheduled to prepare in mid-1989.

1030

Today, we are proposing to make this series of short briefings to you. The spirit of what we are presenting is highlights of what is contained in the document with the intention not of giving you something new, but of emphasizing and clarifying what is in there, and of giving you opportunity for questions in between. On these opening briefs, we request that your questions focus on clarification because we think you will have plenty of opportunity later to ask us a lot of difficult questions about what the substance is.

We are calling this presentation a flyover, covering the first 10 chapters of the document. As I look around the room, I see many whom we have appeared before. You will find a few new faces among us too, and some old ones. We know that what we are presenting today on the first 10 chapters is old stuff to some of you. I am not saying old stuff to older ones; I am just saying old stuff to some of you, and we will be presenting some new stuff to some of you.

The strategy itself comprises 52 strategy statements. They are contained in chapters 11 and 12 and they are the blood and guts of our strategy. We will be proposing, then, starting on Friday, to introduce that, and we would carry you through those 52 elements.

I commented before that when we started this demand/supply options study back in 1984, we did not really feel we were in an urgent situation. We knew we had to do something to meet the needs in the 1990s, but we did not feel an urgency at that particular time. We were just coming out of the recession and so on. On the other hand, as the presentation goes on, we will be presenting evidence to you that an urgency does now exist.

We do not really want to blow the opportunities we have to be placing business and buying power from independent generators, and we do not want to blow the opportunity to make improvement efficiencies now. That basically means that because of this urgency and because of these opportunities, we are proceeding with some interim plans that are under way. These were mentioned by Mr. Franklin the other day, but I would like to emphasize that we have not made any commitments to major supply—that is, nuclear or fossil—or major purchases.

In terms of the finalization of the strategy, after we get the report from this committee, we propose to take that together with the reports we have got from the 10 ministries, from the technical advisory panel and from other public input, including all the input that comes forward from the interveners here, and then we propose to finalize the document, review that with the government and then seek, in early 1989, the final approval of our board.

We tried to develop what we call a durable strategy. We were quite aware when we were developing this strategy that during the period from 1984 to 1988 the numbers kept changing all the time. The strategy does not depend upon an accurate assessment of any numbers. We know that load forecasts will change. We know that we are going to learn as we go along from other utilities. We know that our cost estimates will

change. We know there will be new options and new technology that will come forward and so on. Last but not least, we know that we will learn through experience, particularly in demand management, in terms of new things that we are doing. We intended the strategy to be robust and last for several years, and it is not focused on any particular set of data.

We would like, of course, to reconfirm that we are available for further questions. This is top priority to us. We are also willing to make further presentations to you if you folks want anything further than what we have in this document. Whatever you request, we would be quite pleased to work on it. For example, we could offer a presentation to you on acid gas control; we can offer a presentation to you on global atmospheric concerns, having to do with CO²; radioactive waste plans; nuclear costs; diversity or demand-management impediments, whatever it is you would like. Just contact us.

The review focus then is on the six pages that are in chapter 12 with the 52 strategy elements. Everything we have done boils down to those six pages. Of course, a good strategy is not supposed to be long-winded. It is supposed to get down to the essence, to provide direction. The strategy elements are intended to provide key direction for developing plans to provide an electricity service. Everything else in that document is intended by way of understanding and to provide rationale for the strategy.

That completes my presentation on chapter 1. If I may, before we go to questions, I would like to just head right on into chapters 2 and 3 because of the time.

We gave you a sheet of paper, just before we started, that has 10 questions on it. Those 10 questions correspond to the 10 chapters. Chapter 2 is called "Shaping the Future." It deals with the question of what the general concepts are for preparing integrated demand/supply plans for electricity. I am sorry. I guess it was not distributed. Anyway, that is the question I would now like to deal with.

Mr. Cureatz: Lorne, I can see you are up to your old tricks. Not only are you here to answer the questions, but you give us the questions.

Mr. McConnell: On that note, Sam, we will carry on.

I do not have to tell anybody here that it is absolutely vital, of course, to have plans to shape one's future, no matter what kind of business you are in. The fact that the future for electricity is so uncertain does not make the planning less important. In fact, it makes it even more

important. It certainly makes it more difficult but not less essential. Also, the planning in Ontario Hydro is particularly difficult compared with most businesses and that is because, when we commit facilities, they provide an electrical service for so long.

We are still operating economic hydroelectric plants in Ontario that were designed in 1896. There is a good part of our system for which our fathers and grandfathers made darned good decisions back in the 1920s and 1930s and which are still being operated today. Whatever we do in the next year or so is also going to have a bearing on this province for a long time into the future.

In terms of open planning, which we said we favour and are doing a lot of work on, we are very proud of course of the achievements in the past. Specifically, I think most people here are aware, but if you are not I would like to mention it again, that Ontario Hydro rates are among the lowest in the world. They are about half the United States' average. Our system track record is one of high reliability and we are proud of that. Of course, we want to make sure we have that in the future. In terms of open planning, we have the demand-supply options study to hold up as an example. We are doing open planning and we intend to continue.

In terms of a balance, I would like to bring to your attention that between open planning and timely action, we cannot talk for ever. We have to make some decisions. We have to have some balance between the amount of discussions we have and making some decisions, and that time is near.

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In terms of dealing with uncertainty, the key in the planning concept is flexibility. We have uncertainty in load forecasts, uncertainty in terms of what we will actually achieve in demand management and in terms of what we actually get on independent generation, which may be higher or lower than our forecasts. In terms of supply performance, there is uncertainty. There is uncertainty in approvals as to how long it will take from the time we propose to do something, whether or not we get approval and how long. Of course, there is uncertainty in terms of the technology that will be available. Flexibility is a key to meeting uncertainty, and throughout the strategy you will see an emphasis on that.

We work with a least-risk cost process. For your information, we use the least-risk cost process in the course of doing the strategy work on representative plans. In essence, it does not forecast a rigid forecast of the future. We have a

band-width forecast with a probability distribution in it, and the least-risk is a mathematical process that takes into account that variation in terms of the different loads that might occur. Of course, this process is applicable to both demand and supply options.

In terms of new options required in the future, we require new options for several reasons. One reason is we have a plant that is getting very old and is wearing out or we have a plant that cannot meet new requirements. It may also be simply wise to take a plant out of service because the operating cost is too high and it is better to build something new. Then last but not least, we have to meet any growth that may occur.

It is interesting to note, setting aside the question of growth for the moment, that after the year 2000 we expect the new plant we will have to build will be more in order to replace than it will be to meet the growth. Typically, we expect to have to put about 500 megawatts a year in service or do something with it, redevelop it or what have you, after the year 2000. There is a lot of renewal we have to do, and that is embraced in the strategy.

Mr. Cureatz: Where is our chairman? There he is. Are we allowed to ask questions now?

Mr. Chairman: I think Mr. McConnell would prefer if we could hold it, unless you really think it would clarify something.

Mr. Cureatz: Sure.

Mr. McConnell: In terms of reliability, I would simply like to point out that if we want a system that is more reliable, the cost of power will increase; that is to say, if we want an extremely highly reliable system, the cost of power will be greater than if we have a system that has a very low reliability. On the other hand, if we have very low reliability, there is a big cost penalty there to the customers that are being interrupted. We call that the customer cost of interruptions or the damage function.

Ontario Hydro undertook a very major study in the 1970s in which we went out and got an awful lot of cost information from different kinds of customers. We developed an analysis of this and determined where the optimum reliability should be to meet Ontario's needs.

For your information, this study was, in our opinion, the most in-depth study that was undertaken by any utility anywhere in the world. In fact, our data are used as a Bible by the United States; many utilities use our information because they have never done this kind of analysis. Our situation in Ontario is not that much different

from that of most American states. That is how we arrive at our reliability criterion.

In terms of planning, planning is not starting today and then not doing it for 10 years; it is a continuous process. The economic conditions in Ontario are constantly changing. The societal values are changing from year to year. We have to respond to those and we have to deal with the values of the public as they change, so we have updated forecasts in our planning process. We are constantly doing technical studies and we are regularly, every year, updating our plans and seeking approval as we move along. It is a continuous process.

Of course, planning is integrated. You cannot just do demand planning in isolation of supply planning. Generation and transmission cannot be isolated. We have to take these reliability requirements we were just talking about into account, and of course we have to consider our forecasts, not just a rigid value but the whole band width. So we also refer to our planning as being an integrated concept.

With regard to public input, we have two objectives. Part of our objective is to inform the public of what we are planning to do, what the options are and what the characteristics of the options are, and the other is to get the views of the public with regard to its values and judgements.

I will not spend a lot of time in terms of approvals. Yesterday afternoon, you were talking about one or two of these. Getting approvals is not an easy process for Ontario Hydro. There are not just two things we have to do; there are many. We have an extensive process internally in Ontario Hydro to process recommendations, and we have an extensive set of requirements to meet externally.

The Consolidated Hearings Act was one of the ones you were talking about yesterday. Other public reviews include the Atomic Energy Control Board and so on, listed here. Of course, we have these various acts that, in part, you were reviewing yesterday. Certainly, the Power Corporation Act is a critical one with us. We get final approval through an order in council and government approval on getting blessings to go out and raise the funds for capitalization through bonds.

In terms of shortening lead times, we realize this is important in planning concepts. As I said before, we fully endorse full environmental protection. We have no desire to try to bypass that. Also, there is the question of the needs, and these are interactive. The current process we have is usually effective, but on the other hand,

we have had some extreme cases where things were very slow, with some very extreme consequences. In the report, we talked about the lateness of some of our transmission when we went through these processes, and the out-of-pocket expense to our customers exceeded \$200 million for being late on one project. That concerns us, as I think it should you.

We say, by way of conclusion, that we really need to be working with the government and the Legislature in trying to bring about an improved process. There is no question about it. It is the government and the Legislature that are in control, not us. We are in a role of suggesting and being willing to work with the government and the Legislature in trying to meet the requirements, but at the same time, to do it in a better way. We also have some other efforts under way in terms of shortening construction time and new techniques, because they will help to enhance our planning.

In summary, I have touched on a number of things, and I have not touched upon a few things because of time. This is a list of some of the things I have talked about and some I have not talked about. For example, we do uncertainty analysis, sensitivity analysis and so on.

I would like to move on to chapter 3, which is "Ontario Energy Situation." The question I would like to deal with there is, what role does electricity perform in meeting Ontario's energy needs? That is what that chapter in essence deals with.

1050

Electricity does not exist naturally, we have to make it, and we make it out of some other kind of energy. We may make it out of the chemical energy in coal or we may make it out of the nuclear energy in uranium or we make it out of falling water associated with hydraulic or what have you, so we do not call it primary, we call it secondary because it is made from these other things.

In any event, we do not want to be preoccupied with saying electricity exists for electricity's sake. What we are really saying is that we are looking for the best fit of how it will meet Ontario's needs, how it will best fit into the overall mosaic. That perspective is necessary for good planning.

Just to quickly review some of the characteristics of factors that involve energy in Ontario, Ontario, of course, is the industrial heartland of Canada. The majority, some 50 per cent of Canadian industries, are located in Ontario. Some of the industries that are located here are

energy intensive. If we take the urban centres throughout the province, there is a long distance between these centres. We have harsh weather. Sometimes, we know, it can be very cold, and there is the odd time it can be very hot.

Ontario is a high energy user and of course, as the Ministry of Energy has already reported, there are a lot of efforts in Ontario to improve that energy efficiency, and there are further opportunities.

The electricity market share is increasing. The population of Ontario is increasing. The demographics in Ontario are changing, particularly in terms of the age distribution. We foresee in the next couple of decades that people will be living longer and there will be a larger population of older people. The forecast associated with the economic growth is critical to the load forecast for energy and electricity. In the long term, we see electricity competitiveness increasing; that is to say, we see the price of gas and oil, after the turn of the century, going up faster than the price of electricity.

This is a picture of the primary energy in Ontario. I am not talking about the secondary now, but the primary. Natural gas represents just under a quarter, about 23 per cent. This is for the year 1986 in Ontario. This is not electricity, this is all the primary energy in Ontario. Oil is close to a third, coal around 13 per cent, hydraulic represents about 12 per cent, uranium about 18 per cent, and about three per cent from all others. In the manufacture of electricity, about 38 per cent of that primary energy is used.

In terms of the sourcing of energy for Ontario, and this is Ministry of Energy data, if we take the different forms of primary energy and the location, whether it came from Ontario, western Canada, Canada or the US, we see that the natural gas and oil tends to come from western Canada and the hydraulic, of course, is indigenous to the province. The coal comes partly from western Canada and partly from the US, and uranium comes mostly from Ontario but some from western Canada and Saskatchewan.

The bottom line here is that about 32 per cent of the primary energy is indigenous to Ontario, principally in the form of electricity, hydro and uranium; 57 per cent comes from western Canada, for a total in Canada of 89 per cent, and about 11 per cent of Ontario energy comes from the United States in the form of coal.

I want to talk about the word "conservation" for a moment. What is it—because there are many views. When I use the word "conservation" or you use the word "conservation," the question is,

is the other person who is listening thinking the same thing?

I would simply like to point out that it means a lot of different things to different people. Conservation might mean just to stop wasting stuff; it might mean we want to preserve the things that are most scarce, perhaps like gas and oil in the long term; it can mean we prefer to use renewable resources; it can mean we prefer to use abundant resources; it can, to some people, mean we are talking about recycling material, whether it be cans, pop bottles or what.

I am very impressed with the conservation organizations in Ontario; a great number of them really have to do with preserving the environment. Of course, as you have heard here many times, we talk about conservation as embracing and improving efficiency.

To a surprising number of people in Ontario—and we found this out in our surveys—there is a negative connotation of conservation, where it means people want something, but they are being asked to do without. Of course, we go about and influence our customers to induce electrical efficiency, and in the United States that is called "strategic conservation." It has many different meanings, and I am just putting these up to indicate the problem of communication with the word.

I have to acknowledge at the outset that there are an awful lot of different meanings in Ontario Hydro to the word too, so the different reports we write are not always consistent. We are trying to improve. In any event, we favour the definition where "conservation" is used in the wide context—that is, the wise use of all resources—so it embraces most of those things on that previous table. Based upon the public input we have, we prefer generally not to use the term "strategic conservation," as the Americans do. It tends to be gobbledegook to an awful lot of the public, and we are moving slowly, although a lot of our documents still talk about strategic conservation, to talk about electrical efficiency.

Bob Franklin talked about a mindset in Ontario Hydro. I have great difficulty, I have not got that totally memorized, although the spirit of it is quite clear. He talked about the new corporate strategy for the 1990s attempting to instil within the mindset of everybody at Hydro that responding promptly and effectively to customer needs is what we are in business for. In applying this principle, we must continuously keep the Ontario energy situation in mind and manage electricity so as to best contribute to meeting Ontario's

overall energy needs. On that note, I would like to stop. We will take questions.

Mr. Chairman: Thank you, Mr. McConnell. I note we are about halfway through the morning session. I think members do have questions, so perhaps I could ask the people asking questions, and those who are answering them, to be mindful of the fact that we do have three more chapters to cover this morning.

Mr. Cureatz: Just very briefly, I want to go back to page 10, figure 2.5, "New Options Required." I was not clear. "After the year 2000," replacement may exceed growth. Does that mean the cost to replace old facilities will probably be more money than to spend money on new plants to meet the electrical growth?

Mr. McConnell: If we replace, we can replace with new generation or new purchases, or we can, in part, meet that through demand management options. In any event, what we are saying is that those demand options and those supply options in total will probably exceed the requirements associated with growth, and the probability is that if we have growth, that still takes place over and beyond the demand management options that we would be vigorously pursuing, that it would end up that a large amount of that, if not all of it, would be new generation. Or it could be redevelopment of an existing site or it could be extending the life of a plant. It could be any of those things. But it would be a very large program.

1100

Mr. Cureatz: So you are speaking more about the demand option side of it and saying that notwithstanding the focus on the proposals, by the year 2000 there is still a good likelihood that there will be still a greater demand than some of the alternatives available in the demand/supply study option?

Mr. McConnell: We are trying to say that we should not have a mindset that the need for new plans is focused exclusively on growth. What we are really saying is that the need for new plans has to be focused on both growth and the fact that this plant does not last for ever.

Mr. Cureatz: Right. But you say a replacement may exceed growth?

Mr. McConnell: Right. The amount of action that we have for replacement may very well be larger numbers than the amount that we have for growth.

Mr. Cureatz: Oh, I see, larger than the growth required. The reason that you have to do

it is because you have to replace the old plants. Got it.

Mrs. Grier: Can I just follow up on that because I want to ask about replacement, too. My interpretation of what you said is that because of the need to replace, you will be subtracting from your existing supply a certain amount of capacity—

Mr. McConnell: That is correct.

Mrs. Grier: —which may not necessarily be replaced in the same mode that you are replacing. It adds to the need to replace.

Mr. McConnell: That is correct. It could very well be a demand option or it could be a different kind of supply option.

Mrs. Grier: This surely is not a new concept. Some of these plants have been in operation for quite some time. Has there not been a planned program of replacement and refurbishing quite apart from the DSPS?

Mr. McConnell: That particular question is extremely germane to the current situation. Up until 1950, 100 per cent of the generation in Ontario was hydraulic. During the period from 1950 to 1988 we did develop further hydraulic generation, albeit it only met a small part of our growth.

It meant that we undertook then, in 1950, to get under way on the other major option, which was coal-fired plants. The majority of our commercial stations that are coal-fired came on between 1960 and 1980 so that those plants become 40 years old in the year 2000.

So because the hydraulic plant lasts much longer, in the year 2000 it sets in with a vengeance, whereas up to now we have not seen much of it. The principal part that we have seen so far for replacement is the old inefficient plant that is at Hearn which was built in the 1950s and the plant that was built at Windsor, the J. Clark Keith, which was also built in the 1950s.

So the answer to your question is yes, we have seen some replacement but up to now it has been very modest. In the future it will be very large.

Mr. Marriage: Maybe I could just add that I will be discussing the existing system and the need for new resources, and putting a little bit more meat on some of these questions.

Mrs. Grier: I guess what I would be interested in learning about is what kinds of technical studies are under way to look at the actual replacement of a specific facility and whether or not it is possible, as part of that replacement regeneration—assuming you are not going to abandon them all and there is still something of

substance there, is there a potential for increased capacity from that station as part of the replacement?

Mr. Marriage: That is one of the things we are looking at when rehabilitating or redeveloping a station: Can we get more capacity out of the existing facilities and improve their environmental factors as well?

Mrs. Grier: I wanted to ask a bit about the level of reliability and the 24 per cent reserve margin. I recognize that your study which was done in 1981 is the basis for the decision you have made for 24 per cent, but I seem to recall that the ways in which electricity is being used in the economy has been changing fairly rapidly over the last decade. If that estimate of a reserve need is based on data which was obtained in the 1970s, what modifications have been done to accommodate the changing uses of electricity within the economy? Are you confident that the conclusions you reached in 1981 based on that 1970s data, that you needed 24 per cent, still hold up in today's breakdown of uses?

Mr. McConnell: Directionally, to the degree that our study is somewhat obsolete, we know that if we were to repeat this study it would indicate that the reliability specification should be tougher. In other words, we would have to raise the reliability. This is because of the delicate sensitivities to such things as computers, robotics and a number of things which are emerging in our society. However, at this particular time, we are not proposing to repeat this study. It was a massive effort. It would take us some years. I am not saying we would not be doing it in the future but we certainly could not possibly do it before we have to come up with some definitive plans.

Mrs. Grier: Finally, in your comments on economic growth, you talk about the fact that growth has slowed. I guess it is page 33 of DSPS. The gross provincial product is forecast to grow from \$59 billion in 1985 to \$92 billion in the year 2000. The rate of growth over this period is slowing down. I am talking about the economy rather than energy used. In looking at that, what role is the free trade agreement likely to play and was that taken into account in coming to that conclusion?

Mr. McConnell: On that particular question—and this gets us back to two years ago—I would like to defer that question because it is a part of the presentation by Mr. Rothman.

Mr. South: You indicated that \$200 million was expended or lost because of the lateness in

approval of transmission lines. When we look at some of these costs and see what has gone on at Kanata, for instance, would it not be a good idea to think of putting transmission lines underground in some of these critical areas?

Mr. Marriage: Certainly, it is a consideration in areas which are congested and may have some environmental impacts. But in going underground, especially at the higher voltages we are dealing with, we are looking at costs that are 10 times aboveground.

Mr. South: When you are looking at \$200 million, you are looking at a heck of a lot of money.

Mr. Marriage: I realize that, but it is a heck of a lot of money for major transmission and station facilities, as well.

Mr. South: It might be interesting doing a study on Kanata, for instance, if we had been able to get rid of some of the delay we are having now, as I say, whether it would not have been less expensive to have gone underground.

Mr. McConnell: I think the problem is that it is true that when you look at a specific instance, such as you are talking about, and say, "Gee, if we had only made a concession right there and then that we were going to go underground and pay 10 times the cost," what you are really making a decision to do is you are going to pay 10 times the cost for everywhere in the province for all time to come.

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Mr. South: Everywhere that it is critical.

Mr. McConnell: That becomes tens of billions of dollars.

Mr. South: There are not that many critical places, really.

Mrs. Grier: There are 235 constituencies.

Mr. McConnell: Everybody has his own "not-in-my-backyard" judgement. I guess that is a matter of judgement. I appreciate the point you are making, but I want you to understand that it is very difficult to make the precedent in one place without in fact applying it everywhere else. It is a very difficult thing to do.

Mr. Snelson: Could I add a point to that, please? I do not think one should assume that going underground removes all environmental impact from a transmission line, but underground transmission lines are major installations. They end up with substantial amounts of heat going into the ground, which has effects on the ground. There are some aspects where the underground installation has a bigger environ-

mental impact than the overhead. It is perhaps a lesser visual impact, but in terms of its impact on the environment, in some cases it is a bigger impact than the overhead line.

Mr. South: Visual, though, has been the reason there have been holdups. It has not been environmental. Visual is the *raison d'être* for holding up these approvals. It has not been environmental.

Mr. Snelson: I think there have been some concerns expressed about biological effects of electromagnetic fields, which are not visual impacts.

Mr. South: Of what?

Mr. Snelson: The biological effects of electromagnetic fields, which are not visual impacts.

Mr. South: I did not think you guys accepted that yet.

Mr. Snelson: All I am saying is that those are the reasons that have been put forward.

Mr. McConnell: The delay was caused by that issue, but I would agree with you that in most instances we do get a lot of concern about the aesthetic appearance of the lines. In that particular example that you selected of Kanata, it was the electromagnetic question that was the cause of the delay.

Mr. McGuigan: On the matter of replacement of plants in the future, in the experience you have had now with replacing tubing in the boilers and in nuclear reactors, in spite of the very high cost of doing that, millions and millions of dollars, you have proved that it can be done and you are looking to improvements in alloys and so on.

What sort of prospects do we have that the present nuclear plants could be kept operating much longer than was originally thought? I think people were saying their first life was about 30 years. What progress have we made in keeping them going for a long time?

I am working on the assumption that concrete does not wear out. Perhaps I am wrong on that, but I am making the assumption that there is not much deterioration in the concrete, and you could perhaps keep replacing the internal parts for a long time.

Mr. McConnell: We would be quite happy to give you a much more in-depth answer to this very important question that you have asked. I will try to give a very short answer, but it may not totally satisfy you.

When the Candu concept was developed in the year 1957, it was conceived of on the basis that the pressure tubes would have to be replaced during the life of the station. The economic

evaluations that we did in 1957 assumed a 15-year lifetime; that is, we replaced the pressure tubing at the end of 15 years. It has been a requirement that all Candu plants be designed so that the pressure tubes can be changed during the life of the station. That was a requirement at the outset.

Quite clearly, our metallurgists and our engineers are trying to make longer lives of the components. Typically, we will get only 15 years out of the tubing in a coal-fired boiler, too; sometimes not even that. So it is not an unusual thing to change tubing inside a furnace.

We did have people who felt, optimistically, that we might get 20, 25 or 30 years out of these stations. We did, however, have problems that we encountered, and our present expectation is that we are extremely confident that the tubing will exceed 15 years. With the work that we are continuing to do, we think maybe we will get back up to the 30 years, but that is not yet proven. The replacement is taken into account in the economics.

Mr. McGuigan: That is looking beyond 30 years. Why can we not go for another 60 years?

Mr. McConnell: Material that operates under varying kinds of engineering conditions does not last for ever. Just as you have operated a car, you find out that all the components do not last for ever. We would certainly seek longer lifetimes, but it would be fallacious for us to claim that that has been achieved yet.

Mr. Marriage: Maybe I could just add one thing. Mr. McConnell has just talked about a 30-year life for the pressure tubes. We are assuming a 40-year life for the station in terms of the rest of the components.

Mr. McGuigan: That is the point I am getting at. Going back to the car, you can throw a new motor in and get quite a few more miles out of it. I am wondering why you cannot look at a much longer life for those plants.

Mr. Marriage: As we will be discussing later, we are approaching the end of the life of some of these plants and we are now looking at that in terms of how much longer we can keep them operating. Experience in the United States with some coal-fired plants that are 60 years old clearly shows that you can keep them running if you are prepared to spend the money.

Mr. McConnell: You have to keep replacing the parts.

Mr. Marriage: It is a question of economics.

Mr. McGuigan: We do not have time to pursue it further. Thank you.

Mr. Runciman: The members of the panel might want to comment on this; it sort of ties in with Mrs. Grier's question, but it was mentioned in reference to the growth in the economy being critical to your load forecasts. That was part of your presentation. Again, you are going to get into detail on that, I guess, in the next section, but I was reading something recently about the fact that you have based your projections on the gross national product and about the comparisons with Sweden. The example I saw was that the growth in the GNP was comparable in both countries, but Sweden experienced a significant decrease in consumption, whereas in Ontario we had a significant increase. I hope you will address that question in the next presentation.

Mr. McConnell: Yes. I think probably the best time for us to address that is in the next presentation. I would just briefly comment that I think the same situation exists here in Ontario. We made no claim that there is a direct relationship between the gross provincial product of Ontario for all energy and the amount of energy consumed. What we are really saying is that the relationship is still critically dependent for the role of electricity, where there in fact is energy substitution taking place, and the dramatic opportunities to become more efficient in such things as automobiles and so on are quite different from the dramatic opportunity to make an electric motor more efficient, where they are all running in the 90s to begin with.

Mr. Runciman: I am sort of jumping all over the place here, but one of the references made in your presentation was to the fact that market share is increasing. Mr. Franklin was here the other day. In response to a question by Mr. McGuigan, he indicated that the corporation has no real interest in seeing its share of the market increase. That is not your primary focus; it is customer satisfaction.

Mr. McConnell: That is correct.

Mr. Runciman: I guess you are just simply stating a fact. Do you still carry out an advertising program? Is Hydro involved in an advertising program?

Mr. McConnell: If I may, I would like to defer that question. We will be making presentations later today that have to do with the demand options. I think that would probably be the better time for us to respond to the question, because I think we will have answered it in part during our presentation.

Mr. Runciman: Maybe you can give me a yes or no for now.

Mr. McConnell: We are involved in promotional programs and promotional programs do involve advertising, but on the other hand, there is a question of what the intent is behind that advertising. That is what I thought we should be talking to you about.

Mr. Runciman: Essentially, you are saying there is no advertising directed towards increasing your market share.

Mr. McConnell: I think it is fair to say there is some advertising that implicitly will result in an increase in market share, but advertising to increase our market share is not the intent. Specifically, if there is a better way to get the job done that is in the best interests of Ontario and that will reduce the demand, that is good. If it happens to increase the demand, as long as it is doing a better job for Ontario, it is the customer service that we are focusing on—that is what I am saying. I think it would be better if Mr. MacCarthy and Mr. Palmer were to address that question. They can do a much better job than this panel.

Mr. Cureatz: Mr. Runciman, I cannot restrain myself, and I say to the chairman, on a supplementary—

Mr. Chairman: Will you restrain yourself shortly, though?

Mr. Cureatz: Yes, I will. Oh, it is so hard, so difficult. But on that very point and to give some anticipation for those who are going to respond more fully to my concerns, in terms of the advertising, as I had asked Mr. Franklin, I encountered in my own riding a particular portion of a subdivision in which there was heavy advertisement by the developer about all-electric homes. It was not fully expressed that these particular areas were not under a municipal hydro commission but under a rural commission, and right across the street from the city of Oshawa the people in this rural hydro jurisdiction are paying substantially more than the city of Oshawa. I have gone through the whole public meeting and the city of Oshawa is a slight exception, but notwithstanding that, they are still paying substantially higher.

We are trying to sort that out with Mr. Franklin, having more meetings and what not, but it goes to the point of Mr. Runciman's. There certainly appeared to me an indication of encouraging, certainly by the developer, to foster the idea of all-efficient electric homes. The rest of the subdivision is gas and substantially lower

in price. And I get stuck with the headache. Do I need it? It is all your fault, so get ready for this afternoon.

Mr. McConnell: Right. OK.

Mr. South: Have a good lunch.

Mr. Runciman: Another thing I would like to see thrown into the mix here at some point—I know it is sort of a drastic position for any politician to take, let alone Hydro—is that you mention with some pride your pricing. I can appreciate that, but I also wonder if the pricing policies of Hydro, supported by the government and to some extent by the Ontario Energy Board, are really appropriate. I hope at some point during this whole exercise we will get into that question in detail.

On public reviews, you listed a group of agencies and others that are involved in reviews. There was no reference here to international inspections. I was just curious: Is there not some international body that is involved?

Mr. McConnell: Yes, there is. We did not attempt to make that a complete list. On hydraulic projects that are on international waters, we find ourselves having to deal with agencies of the United States and all of their particular application. Buying and selling power certainly involves American processes that have to be followed in order to consummate a deal, and there are a number of other requirements that have to be satisfied that are not on that list.

Mr. Runciman: OK. You mentioned that one of the themes that is going to be pressed during this process is that an urgency exists. I am curious about tying that urgency in with export levels. We tried to get into this a bit with the Ministry of the Environment people here yesterday. I am curious about the export levels and how they tie in with what you describe as an urgency.

Is there a commitment at Ontario Hydro, the corporation, to maintain certain export levels? When we are talking about urgency, we are talking about urgency within the demand growth in this province and we are not taking into consideration the export market whatsoever, or if we are, we are taking it into consideration in terms of increasing it.

Mr. McConnell: Our policy at the present time, which comes from government direction, is that we have not committed capacity to meet requirements outside of Ontario Hydro in the past and we are not proposing to do so in the future.

What we do is export in terms of what we call opportunity. There is what is called north-south diversity where we tend to be—in spite of

today—on the average a colder place than to the south of us, so we buy and sell north-south to take advantage of economic opportunity. We will be presenting that opportunity to you, but we are not committing to meet requirements outside of Ontario.

Mr. Runciman: Just out of curiosity, is Lennox the station down in the Kingston area?

Mr. McConnell: Lennox is in the Kingston area, yes; and that is an oil-fired station.

Mr. Runciman: Is it simply with coal where we have problems in terms of acid gas emissions, or is it also in oil-fired plants?

Mr. McConnell: There is some sulphur in oil, but a much lower level. Typically, 0.03 per cent as compared with, say, two per cent.

Mr. Runciman: When you brought Lennox on stream, it had been mothballed for a period of time, then it was brought into operation last year; last winter, I guess. Were you still maintaining your level of exports during that period of time?

Mr. McConnell: Generally speaking, we were bringing that on to meet our own loads. That was the primary requirement.

Mr. Runciman: I guess I am trying to tie in the acid gas emissions question. When you have to use coal-fired generation or oil-fired generation and create more, if you will, acid gas emissions, you are doing that rather than reducing export levels; that is what I am suggesting.

Mr. McConnell: We brought Lennox back into service to meet Ontario needs.

Mr. Runciman: You could not have done it through reducing exports?

Mr. McConnell: No.

Mr. Marriage: No.

Mr. Runciman: Then exports were in no way diminished during that period of time?

Mr. McConnell: We would not blow the opportunity from hour to hour and day to day to make profits to reduce Ontario customers' costs, but by and large, we needed Lennox to be brought on stream to meet our own loads. Last winter we were running everything, and buying too. We will be talking about that in the presentation later.

Mr. Runciman: One final question: You talked about early 1989 for final approval of the board. I touched on this briefly with the chairman yesterday. When he appeared before us, the Minister of Energy was looking at something like a time frame of 18 to 24 months, which is going to make it difficult for you to realize your goal of

early 1989 for final approval. I am just curious about what problems you see cropping up if indeed the minister's suggestion is correct that, at the outside, two years from now you are going to have a final decision before the board.

Mr. McConnell: An approval of a plan is not an approval of the project. It could take you a great deal longer to get approval of projects than the review of a plan. I would like to differentiate the two. On the slide I presented, I talked about approvals of projects and approvals of plans. We could have you people review a plan here, for example, and you might bless it; but on the other hand, you could not take the people who live in that community for granted. You still have to go through an environmental process before, in fact, an order in council would be received.

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Mr. Runciman: You are talking about early 1989 approval of a plan or a project. What were you referring to?

Mr. McConnell: We were talking about simply having the strategy finalized, this draft strategy, in early 1989. We were talking about submitting a plan for consideration in the middle of 1989.

Mr. Runciman: So in terms of determination of the kind of project or projects, you have no problems with the two-year time frame the minister has suggested. It does not present any problems for you?

Mr. McConnell: I do not know of any simple answer to that question, because there are so many different kinds of projects that one can be considering. But certainly if, for major supply, we had a process that could deal with it in a two-year time interval, I think generally most of us would be very pleased.

Mrs. Sullivan: I have questions that I think I will put later on as we get into other sections, but for one, and that relates to the reliability section.

I wanted to know whether the criteria used for the reliability assessments included the quality of electricity, noise factors in transmission and consistency of quality of supply and so on, or is that something that is becoming more and more of urgency to Hydro and to be considered in annual plans? Where is the fit there? I do not see the word "quality" in the DSPS material.

Mr. McConnell: Mr. Marriage will be talking about the evaluation criteria in this flyover of the first 10 chapters, so he will be addressing that question later.

Mr. Marriage: Maybe I could add to that, as Mr. McConnell said earlier, that this strategy in

the document is primarily related to the generation and demand options. Our criterion here is just a generation-planning criterion. There are a lot of other criteria and standards related to transmission, distribution and the facilities. They are not included in this document, because we were not dealing with that component of the system.

Mr. Chairman: I guess we should move on to the second half of the presentation this morning. I notice it is now past 11:30 a.m. I wonder if the committee would concede to sit perhaps until 12:30 p.m. Do you think we could cover it and get some questions in on the next three chapters?

Mr. McConnell: If we may, normally we do not like to make presentations that are much longer than 30 minutes before providing an opportunity to ask questions. But with your indulgence, we would propose to make the other two presentations now and then ask for questions, if that is acceptable. Now, that would be a little bit longer than half an hour.

Mr. Chairman: There are three more chapters to cover this morning.

Mr. McConnell: Yes, if that is all right with you.

Mr. Chairman: If we could do that, perhaps that would take a little more than half an hour, you are saying?

Mr. McConnell: Yes, it would take 50 minutes to cover the last three.

Mr. Cureatz: And then we will postpone the questioning.

Mr. Chairman: Would it be acceptable to commence there? Would the committee want to commence the afternoon session with questions on what was done in the morning, say, for half an hour? Then would that leave you enough time, Mr. McConnell, if we could perhaps go until 4:30 p.m. or so?

Mr. McConnell: Sure, that would be fine. Is your proposal to make both presentations or just the one?

Mr. Chairman: When you say both—

Mr. McConnell: We have three more chapters. We have electricity requirements by Mr. Rothman, which is 20 minutes, and then chapters 5 and 6 by Mr. Marriage, which is 30 minutes. Would you like us to—

Mr. Chairman: We propose to go through those. That would then take us, as I understand it, until about 12:30 p.m. Then we would adjourn until the afternoon and then have questions, if the

committee could agree to, say, half an hour of questions when we come back.

Mr. McConnell: That would be fine. We will have Mr. Rothman then, who is our director of economics and forecasts, speak next.

Mr. Chairman: Fair enough. Let's proceed on that basis then.

Mr. Rothman: My name is Mitchell Rothman. My topic this morning is electricity requirements, and we are talking about how much electricity will be needed in the future. As a brief outline of the presentation, I am going to talk about the load forecast. First, I will talk about what it is and then about how we go about doing it. Then I am going to give you some indication of what is in the most recently approved load forecast, which is the 1987 long-term load forecast.

I am going to spend most of my time on those first two topics, and then I will talk about a few other things I thought you might be interested in and that are important. One is some information about the recent history of load growth. Another is things that have happened since we completed that 1987 long-term load forecast which are likely to affect the next long-term load forecast, which is currently in the very early stages of preparation. Then I will touch just briefly on the topic of uncertainty.

To start off with some terminology, a few definitions, we have recently, within the last couple of years, changed the terminology. We have added some new concepts, because we needed to be able to deal with the effect that Ontario Hydro's demand management programs will have on the Ontario electricity system and on the demand for electricity.

We have produced some new terms. We start out with the basic load. The basic load is the load that would occur within Ontario's hydro system if there were no incentive-driven demand management programs undertaken by Ontario Hydro. So basic load is the load that emerges from the set of factors I will talk about in a minute that drive electricity demand.

Incentive-driven demand management is the impact of Ontario Hydro's programs of financial incentives to its customers to encourage efficiency improvements. What Mr. McConnell referred to just a minute ago as strategic conservation in the jargon of some other utilities, we are calling incentive-driven demand management to be quite clear about what it is that produces the reductions in demand. We subtract that incentive-driven demand management from the basic load to arrive at the primary load.

The primary load is the load of Ontario Hydro's customers within Ontario which Ontario Hydro has to supply either by generation or by purchasing power from other sources. That definition is not changed. We always called the amount of electricity that we have to provide to our customers in Ontario our primary load and we continue to call it the primary load, and it is the primary load that is used for system planning decisions.

I want to talk a little about how we do our long-term basic load forecast. We understand that electricity demand is driven by a very complex network of factors. We can summarize the most important of those as the rate of population growth and the level of population; the rate of economic growth and the level of activity in the economy; and energy prices, the prices for electricity and other forms of energy—energy with which it competes and electricity itself.

We can use two kinds of models. We have econometric models and end-use models. I will be more clear about that in a minute.

Finally, we take the result of those two models. We apply judgement to those results and we come up with our final forecast.

I said it is a very complex set of factors and a complex set of interactions which can determine electricity demand, given all of the things which drive it. In order to understand those interactions, we build models. We have to build models. A model is simply an abstraction from reality. We can abstract from reality at different levels.

An econometric model abstracts from reality at a relatively high level. It looks at questions we have just raised, like what is the aggregate interaction among the rate of economic growth, energy prices and the rate of electricity demand growth? That is a pretty highly abstracted level. The way we do econometric model estimation is to look in the past for the historical relationship among those variables, establish it by statistical means and then do a forecast by using forecasts of variables like the rate of growth of the economy in order to determine the rate of growth of electricity demand. That we call a top-down approach because we start out at a very aggregate level—economic growth, energy prices, population growth—and we work down to electricity demand.

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The other kind of model we use is the end-use forecasting model. That takes a lower level of abstraction. It looks at it at a more detailed level and it is a bottom-up forecast, because we look at

specific energy demands and add them up. We look at the amount of energy we need, the amount of electricity we need for the air conditioner in this room and air conditioners in all commercial buildings. We take that essentially by square footage in commercial buildings. This is a governmental or institutional building. We take the number of square feet of those buildings. We add all those up. We do that in the commercial sector, we do that in the residential sector and in the industrial sector. We look at each end use of electricity, the demand for electricity for producing this service that electricity produces; we add up all of those and that produces our end-use forecast.

We have two kinds of end-use models. One is an existing model that we originally acquired from the Ontario Ministry of Energy. It is a model that has a very large number—thousands—of very detailed assumptions at the level I just indicated, and it simply adds up all those assumptions. That model is difficult to use because it is so assumption-intensive and so detailed.

We have recently acquired from the Electric Power Research Institute in the United States a set of models, one for each of those sectors, that do econometric statistical estimation—to start out with, of things like how much square footage there will be in commercial buildings, driving them with the same kinds of drivers—and then go to the detailed question of how much electricity use there will be in each of those areas and add that up.

That is a comprehensive combination model of the kind that the technical advisory panel talked about in its report. That is the model that we have now been working for two years very intensively to update, to adapt it for the Ontario economy and make it operational. We are very close with the residential and commercial model. The industrial model is another year away because it was not an operational model when we got it. We are one of the test utilities, and the model itself is still under development. It is not commercially available to anybody yet.

As I said, we do our two models. We get a forecast from the econometric model; we get a forecast from our end-use model. We take those two forecasts, apply our judgement and arrive at a recommended forecast somewhere between those. Then we go through an extensive review process. First, we take it to an external advisory committee composed of energy forecasting experts from a wide range of places and we spend a full day with those experts. We lay out our

models. We lay out our results. We lay out our input and our assumptions. We give them everything. We give it to them in writing in advance and we spend a full day with them. We get very valuable input from that process.

Once we have taken that input into account, we then go through an internal review process with our major stakeholders, an internal advisory committee composed of major users in the corporation, the senior management committee, the technical advisory committee and the board of directors, and we get, again, very useful interaction with those groups in order to understand how they will use our forecasts and what kinds of information they need from us in our forecasts.

That roughly completes my first section on how we do the forecasts.

Here is the forecast itself. We start out, as I said, with the basic forecast, and it shows a growth in peak demand between 1987 and the year 2000 of roughly 9,000 megawatts, an average growth rate of 2.8 per cent a year, or 700 megawatts a year. This is the growth that would occur in peak demand without Ontario Hydro's incentive-driven demand management program. We have a growth in energy of roughly 50 terawatt hours at a rate of 2.7 per cent a year. That is an average over the period. We expect that towards the end of that period the growth rates will tend to be lower than they are towards the beginning of that period, because we know that unless we get some unexpected surge of immigration, population growth rates will be lower by the end of that period than they are at the beginning of that period; labour force growth rates will be lower, so we would expect the economic growth rate to be lower and, therefore, electricity demand growth rates to be lower.

Our forecast of incentive-driven demand management: At the time of this forecast, the corporate commitment was to achieve 1,000 megawatts of efficiency improvements in incentive-driven demand management programs by the year 2000. That was our forecast.

Similarly, the forecast of 1,000 megawatts of peak load shifted off-peak by the year 2000 through the impact of time-of-use rates and other initiatives. That is about as much as the system can take. If we shift much more than that off the peak we start getting peaks in the middle of the night or something like 24-hour flat load for load curves.

A primary-load forecast, then, as I said, simply takes the 30,400 megawatts as the basic load forecast. Subtract the 1,000 peak megawatts

from efficiency improvements and the 1,000 peak megawatts from the time-of-use rate impact and arrive at the 28,400-megawatt peak of the primary load. That is a growth rate of only 2.2 per cent or 550 megawatts a year, down—remember—from 2.8 per cent or 700 megawatts a year without the incentive-driven demand management programs. For energy it is 2.5 per cent and 3.6 per cent.

Notice, of course, that the peak is affected much more heavily than demand. Peak now is forecast to grow more slowly in the primary load forecast than energy demand, whereas it was a little bit the other way around in the basic load forecast. That is the effect of adopting programs to encourage load shifting in order to keep the peak from growing so rapidly and in order to prevent the need for extra supply in Ontario.

We have already had some questions about the relationship between economic growth and the level of electricity demand, and I wanted to talk a little about that. This chart shows what has happened in terms of the number of kilowatt-hours per dollar of real output in the Ontario economy over a reasonably long period. We could actually take this back to the 1920s. From the 1920s until about 1982, pretty steadily the number of kilowatt-hours extra used for each extra dollar of output in Ontario grew; for every extra dollar we were putting out, we needed more and more electricity. We did not just need as much more as we did the last year; we needed a little bit more than that, until 1982. In 1982 this turned around, and we started to use less electricity, have less increase in electricity demand than we did in economic activity.

If I were to do this chart for total energy, that would have a long-term growth up to about 1973, and it would then turn down. Our question is for electricity. Is this downturn, this increase in electricity efficiency, likely to continue, as our forecast implies, or will it flatten out, or will it turn back up again? Our forecast is that increases in the energy efficiency of electricity use will more than offset the new uses of electricity and any changes in industrial structure. We still expect, of course, that over the long term, growth in electricity demand is closely related to the growth in the economy but that we will not continue to use more and more for each new dollar of output.

Of course, we also compare our forecast of electricity requirements in Ontario to those of others. There are not very many other forecasters than Ontario that regularly produce forecasts of electricity requirements on a long-term basis,

and you can see that we are roughly in the middle of the range of those forecasters.

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That completes my discussion of the recent load forecast. Now I want to talk about a couple of other topics. You may hear people talk about the very rapid growth in the last five years, and it is true. If you take 1982 to 1987, that rate of growth—4.6 per cent per year of energy demand, 5.1 terawatt-hours per year—was very rapid. In fact, if we take out 1982, which was kind of slow, if we go back to the five years before that and take growth, this growth is roughly twice the rate of growth, both in percentage per year and in terawatt-hours, that it was in the five years preceding that period. It was quite a turnaround. The rates of growth doubled.

But 1982 to 1987 is kind of a funny period to take, because 1982 was the bottom of the valley. You are going to get a higher incline if you look from the bottom of the valley to the top of the mountain. Nineteen eighty-two was the bottom of the recession. You are going to get a steeper hill from the bottom of the valley than you will from a plateau part way up.

If we take a better year for comparison, 1980 to 1987, what we get are growth rates of 3.4 per cent per year, which is much more comparable to our forecast on energy, and 3.8 terawatt-hours per year, which is pretty close to our four terawatt-hours per year that we had for the basic load forecast. So the very strong growth rate of the last five years was clearly unsustainable and related to the very severe 1982 recession, the deep pit we got into, and you cannot expect always to continue to climb as steeply as you did when you were getting out of that pit.

Finally, there are a few things that were not in the 1987 long-term load forecast. First, the free trade agreement itself was concluded after the completion of the 1987 load forecast. I would expect that we would have to increase the probability of the implementation of the free trade agreement in our next long-term load forecast. For obvious reasons, it is still not 100 per cent, but we would have to increase its probability, given that there is an agreement now, and at the time we did the forecast, there was not an agreement. There were only some ongoing negotiations and you could take your pick of which weeks you wanted to make your estimate whether your probability would be high or low. We are going to have to increase our cognizance of that.

We have done a study that indicates that an implemented free trade agreement would likely

raise electricity demand in Ontario in the year 2000 by about three per cent. Second, the chairman's new initiatives on demand management, which have doubled that target from 1,000 megawatts of efficiency improvements to 2,000 megawatts of efficiency improvement, was not known at the time we last did our incentive-driven demand management forecast, and we can reasonably expect that commitment will influence our next incentive-driven demand management forecast. Finally, at this year's hearings of the Ontario Energy Board, we updated our forecast for 1988. We increased it by about 2.6 per cent.

Finally, I want to touch briefly on the subject of uncertainty. I have given you a single number for electricity demand in the year 2000. I know and you know that what is true about that number is that it will not happen. That single number will not occur. The forecast is not a single-number forecast. It has to be considered as the centre of a range of possible outcomes. So we have forecast a band. The median of that band is shown here, and here is the band shown on this chart.

I will be talking in a later presentation a good deal more about uncertainty and about how we go about deriving that. I want to just touch on the topic now to emphasize that. I do not tell anyone that this line is the truth, is what is going to happen and is the only thing you can plan for. We have to say rather, "This is the centre of a range of possible outcomes and we have to be able to plan for that range."

Finally, to summarize, I have talked about the load forecast. It has a central role in planning. I have talked about how much electricity we will need. I have defined the load forecast. I have talked about what it is. I have talked about how we do it. I have given you some results from the most recent forecast and then covered a few other topics like the very strong rate of growth over the last five years and why we do not expect that strong a growth rate to continue, some developments that are not in the 1987 load forecast, and I have touched briefly on the subject of uncertainty.

Mr. Marriage: Good morning. Just to remind you again, my name is Art Marriage and I am the director of system planning. I will try to move through the next two chapters fairly quickly. What I will be dealing with first is how much electricity the system can supply. Some of this has already been covered before. I will try to quickly run through it and give you some facts and figures to put some meat on the bones, since

your chairman expressed an interest in getting some of the information on our existing system.

As Lorne McConnell indicated, it is an integrated system of generation, transmission, distribution and interconnections with our neighbouring systems. I am also talking about "committed," which are those facilities that have been approved and are under construction, such as Darlington and the lines out of Bruce, as well as everything we have to date.

After Darlington is completed, we will have 81 stations: 68 hydraulic; eight fossil, burning coal, oil and gas; five nuclear. We have about 27,000 kilometres of transmission lines, the bulk of them being at 115 or 230 kilovolts; that is, thousands of volts.

This transmission system, of course, connects the generation to our 316 municipal systems, like Toronto Hydro, which serve roughly 2.3 million customers; 50 rural distribution systems serving another 800,000 customers, and 105 direct industrial customers, fed off the high-voltage lines.

Just to give you an appreciation of both the extent of our system and the diversity of location, you can see from this map, which you have a copy of in your binder, that not only do we have a mix of generation, but the generation is spread around the province and connected to our high-voltage network. This network, as well as the diversity of our stations and the mix of the stations, provides a reliable system and our interconnections with the neighbouring utilities.

I would like to touch on demand and peak capacity. As indicated, the demand varies throughout the hours of the day, the days of the week and the weeks of the month, rising early in the morning and staying fairly flat through most of the 16-hour daytime period. This is characteristic of Ontario loads, that it has what we call a high-load factor, which is really the ratio of the average load to the peak load. This gives an indication of the spread between the minimum load and the peak load at any particular time. It also indicates that we have to look at this in considering how much load we can shift from the peak time to the off-peak time in our demand management programs.

The demand will have to be met at any instant of time by our generation, and of course the peak amount of capacity required will be based on the peak demand, as shown here. As Lorne McConnell has indicated, we need to provide a reserve margin above this to reliably meet that load, because generation may be out of service, loads may be higher than expected or other conditions

can affect the amount of capacity. This is roughly 20 to 25 per cent of the peak load.

We have again touched on this a bit in terms of the load and capacity balance. This past winter, even bringing a couple of Lennox units on oil out of mothballed or shut-down state, we had a capacity of 24,600 megawatts available to generate. We experienced a peak demand of 22,600 megawatts. There was only a 2,000-megawatt margin or reserve between our capacity and our demand, which is only eight per cent, compared to our planning target of 20 to 25 per cent, and we were purchasing from other systems to meet that.

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Looking ahead to this winter, our available capacity will increase with the two Pickering units back from retubing and another Lennox unit we are bringing back into service, but of course, the peak demand has also increased, forecast at 23,000 compared to 26,000 megawatts; again, only about a 3,000 reserve, about 11 per cent.

On the bottom line, we really have no surplus generation in our system at all—even with Darlington, that will be eaten up with the increase in load—other than some very old and inefficient plants at Hearn and Keith at about 1,400 megawatts.

This just looks ahead. In 1993, after completing Darlington which has another 3,500 megawatts, we will have a total system capacity of 32,000 if we can operate it all, all of the time, made up of 20 per cent hydraulic, 43 per cent nuclear, some 29 per cent coal and eight per cent oil, which I think is a fairly diverse mix of capacity. When we look at the reserve margin needed, of course, this capacity will reliably meet a load of about 26,000 megawatts.

I would just like to touch on energy. The energy really is the summation of all of these hourly demands in terms of kilowatt-hours or megawatt-hours over some different time periods. Again, I am just using the same example of the daytime, one day. Our system allows us to take advantage of low-cost hydraulic and nuclear generation to meet what we call the base load continuously throughout the daytime, which is at least minimum load or maybe less. We then use our coal plants, which are economic in a peaking and intermediate role, to meet the remaining requirement.

Not all of our hydraulic capacity, because of flows, storage and other conditions, can be operated base-loaded. In fact, only about 45 per cent can be done that way, primarily the Niagara and St. Lawrence generating stations. So we use

a lot of our hydraulic, in terms of operating for short periods of peak time, to reduce the amount of coal generation during the peaks, as shown here. Looking ahead again to 1993, with the completion of Darlington, we will have an enviable position, I think, in terms of being able to meet 80 per cent of our energy from indigenous, low-cost resources, 22 per cent from our hydraulic, some 60 per cent from the uranium and nuclear generation, and the remainder, primarily coal, of about 17 per cent.

This mix of these different types of stations really has provided our system with low cost and that is what I would like to touch on briefly. I have just looked at the 1987 average cost of generation, looking at all of the stations in the three categories, and this is in our latest annual report. For 1987, as you can see, the hydraulic is a low-cost energy source in cents per kilowatt-hour of one cent. The nuclear is the next at about three cents a kilowatt-hour and the fossil is the most expensive at four cents.

This takes into account the cost of building the plants in terms of depreciation and interest, and the operating costs in terms of operating maintenance, administration and fuel. Of course, the low fueling is the hydraulic and nuclear and the high fueling cost is the fossil, which makes it the most expensive. One key thing to point out here is that between 1983 and 1987, we have brought eight nuclear units on for 5,000 megawatts. That is why this number is much higher, because we have really not brought out any new generation in those classes over this time period.

Mrs. Grier: Is Darlington in the 2.2?

Mr. Marriage: No, this is 1987.

Mrs. Grier: I see.

Mr. Marriage: Now, we take the generation costs and add them to the costs for the transmission, the distribution, the administration and also the municipal utilities to get this electricity down to your home and business. I have looked at the electricity bills and I have picked just the residential customers, looking at a month in 1987 and an assumed consumption of 1,000 kilowatt-hours, which is pretty close to normal without an electrically heated house. I have compared both Canadian and United States cities and these are the 1987 costs, in Canadian dollars, for all of them.

You can see that Ontario Hydro lies towards the lower end of this list. You can also take the costs divided by the kilowatt-hours and get something equivalent to the rate in cents per kilowatt-hour, which, averaging over all of our Ontario municipal utilities, is 5.6 cents. That is

very low compared to a lot of the US utilities. If you look at Detroit, people there would be paying 11.9 cents a kilowatt-hour for their electricity, which is almost double the Ontario rate.

Mr. Richmond: I presume your Portland is Portland, Maine, rather than Portland, Oregon, which is hydraulic.

Mr. Marriage: I could not tell you for sure now.

The main thing here is the only systems in Canada that have lower comparable rates are the ones that are endowed with hydraulic resources, such as Manitoba, Quebec and British Columbia, or endowed with indigenous fossil fuels, such as Alberta and Saskatchewan. Again, this is the advantage of using indigenous resources for supplying electricity.

Before leaving this quick review of the system, I would like to touch on some of the operating constraints that impact on the way we operate our system. We have already touched a little bit on the transmission in terms of inadequate transmission through delays in placing facilities in service in time or limits on the number of lines or rights of way, which will impose economic penalties on our system and could impact on the reliability of this system.

We have talked a bit about the situation at Bruce, where we cannot get all of the generation out of the Bruce area, sometimes 1,200 megawatts being what we call locked in. This will cost our customers about \$200 million by the time the lines are completed in 1990 and 1991, primarily as a result of displacing the lower-cost nuclear with fossil fuel generation.

Also, on the hydraulic, I have mentioned that because of limited flows, storage capability and other characteristics, about 55 per cent of our hydraulic generation is limited just to peaking operation, in most cases only being able to generate between two and eight hours a day at maximum output.

We are also limited by the rainfall. In the past year, we have experienced a fairly dry year. Our hydraulic production has been down 15 per cent. That resulted in generating another 5,500 gigawatt-hours from coal, gigawatt-hours being millions of kilowatt-hours, and also increasing the acid gas emissions by some 69,000 metric tonnes.

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Also, the hydraulic generation is constrained through a number of environmental considerations, those being navigation, flood and erosion control, recreation and fish management, to name a few. Also, I would like to touch on the

acid gas emissions which, of course, will be constraining our fossil plants as we move into the future with the provincial regulation decreasing to a level of 215,000 tonnes by 1994.

With this existing regulation and possible further regulations, we will be severely constrained in operating our coal-fired stations. We are looking at major expenditures for the stations to be able to burn lower-sulphur coals from both western Canada and the United States and also to reduce the emissions going up the stacks.

Just to sum up, I think I have pretty well covered all of that in answering the question, "What can the system meet?" It is the 26,000 megawatts of load, taking into account the reliability. We do not have any more surplus on our assessment.

Let me move on to the next chapter in rapid fashion here. Now I will be dealing with the need for new resources, looking at the load forecast and the capability of the existing system. This is a very simple diagram of how we determine the need date and then the quantities of new resources by comparing the load forecast.

In this case, I am using the basic load forecast, with the demand management being considered one of the options to meet our requirement, and the 26,000 megawatts of load-meeting capability of the system. I will get into the dates on the next slide.

The one thing I would like to stress is that, as Mr. Rothman has indicated, we do not plan to a single forecast. We have to look at a range of forecasts. That can affect the dates as well as the demand management and the nonutility generation.

Looking at the load forecast variability and the existing and committed system, we will need new demand management and supply options by 1996 under the medium forecast as early as 1992 under the upper, and beyond 2005 under the lower. You will likely say, "It looks as if you are already out of time." I think you are almost right. But we have touched on some interim plan that we have undertaken.

Just to recap what Lorne has said in his introduction, in 1984 we thought we had a bit of time to pause and review our options, starting a demand/supply study. Of course, now we have seen a lot of things overtaking us and there is an urgency to get on and meet our customers' needs. We have undertaken a number of initiatives to put us in a position to be able to meet these requirements in a quick and orderly manner.

The president touched on some of these on Tuesday. I would just like to recap that we are

doing some planning, testing and implementing of some of the demand management options. We are also negotiating and implementing some nonutility generation, both of these where they are certainly economically attractive to do so.

We have engineering and environmental studies under way on three different hydraulic sites. We have talked a little bit about looking at pressure tube replacement and other programs to ensure the 40-year life of our nuclear stations. We are doing work right now on the Lakeview station in terms of rehabilitating it and on some of our hydraulic stations to keep them operating and also to see if we can make improvements to them.

We have submitted an environmental assessment document to the Ministry of the Environment on ways to meet acid gas through retrofitting controls on our existing coal plants. In October last year, we made a purchase from Manitoba Hydro of 200 megawatts starting in 1998, for five years, to 2003.

One of your questions may be, are we jumping the gun in terms of the review of the strategy of these interim plans? We may be in some ways, but we really have to meet our customers' requirements. That is what we are in existence for. We felt that the things we have been doing have been consistent with the draft strategy. The important thing is that most of these commitments have not been made yet as far as major expenditures to implement major demand plans or to construct supply facilities. We have, though, made a commitment for the Manitoba purchase. We are making some commitments for attractive demand management and nonutility options.

Most of these other commitments will not be made until 1989 or beyond. These interim plans will be included in a definitive plan to be submitted to the Minister of the Environment by the middle of next year, and of course, as we have indicated, will be subject to further reviews through the various processes.

Looking at what these interim plans do to our need dates, if we are successful with these plans—and they include 2,000 megawatts of efficiency improvements and 1,000 megawatts of load shifting by the year 2000, plus the hydraulic and some nonutility generation—that can defer the need date for other facilities and demand management beyond what is in the interim plans, to 2002 under the medium growth and to 1995 under the upper growth.

Again, I would like to emphasize, as we have had some discussion this morning already, that it is also important that we carry out work to retain

all of the existing facilities we have, such as the Lakeview generating station in Mississauga. If this work is not done, we could lose 2,400 megawatts or more from some of the other facilities, and that would advance the need dates.

Mr. Richmond: Those two dates are for bringing into service whatever new alternatives.

Mr. Marriage: Yes, whether it is demand management or supply.

Mr. Richmond: Not for commencing planning or construction.

Mr. Marriage: No. That is what I said. We have a number of things under way right now in terms of planning to be in a position to do this.

Again, I would like to re-emphasize the urgency in getting on with the planning. Although we have a number of interim plans already under way, most of them are not yet committed as far as construction or implementation of major programs. There are still uncertainties in terms of the acceptance and approval of these plans. In addition to that, we have a number of other considerations in terms of the recent strong growth, the load forecast uncertainty, the ageing of the power system, long lead times and the economic and reliability impacts, which I will very quickly mention here since some of this has already been discussed.

Mitch Rothman, in his presentation, talked about our recent experience, and again this gives you a year-by-year picture. It has been averaging, since 1983, about 900 megawatts peak demand a year and an energy growth of some 5,000 gigawatt-hours per year. That growth, since 1983, when we started the demand/supply study, is equivalent to the Darlington plant or two Beck plants. We are talking some 3,700 megawatts and 20,000 gigawatt-hours of increase in this time period.

Also, Mitch talked about the load forecast uncertainty. This table looks at the additional electricity needs above the 26,000 megawatts that our existing system, with Darlington, can supply. You can see that under the median forecast, by 2000 we will need another 4,000 megawatts, increasing to 9,000 megawatts by 2010.

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If we look at the upper growth, we could end up at the end of this planning period with an additional requirement of 26,000 megawatts, which is equal to everything we will have on the system by 1993. So we are looking at doubling what we have on the system by 1993. Again, this

emphasizes both the range of uncertainty and the need for flexibility.

Again, we have touched this morning on the ageing of the power system. Like all of us, everything gets older as you move on in time. Looking to the year 2010, the existing and committed system, again including Darlington, will be able to meet about two thirds of the demand, if we can keep it all running until then, but this existing system, or many of its components, will be reaching the end of its life.

When we look at the hydraulic stations, which have an assumed life of between 75 and 100 years, by 2010, on average, the stations will be 80 years old. Some will be younger; some will be even older than that. For our nuclear stations, we are assuming a 40-year life. On average, they will be 30 years old by 2010; and our fossil plants, assuming 40 years of age, will all, on average, have reached that time.

I would also like to point out there is a similar situation with the transmission system. Over half of our transmission system facilities, both lines and stations, will have reached the end of their assumed life by the end of this century.

All of these, of course, will impact the need to replace, rehabilitate or redevelop the timing of new options.

I will say just a few words on the lead time. Looking at our major supply option, taking the hydraulic and our nuclear and fossil plants, as well as purchases, which would have to come from new hydraulic plants in other systems, we are looking at a range of between six and 13 years; the lower numbers, of course, being related to extensions to existing plants or redevelopment of existing plants, the higher number being new plants.

We also are looking at new clean-coal technologies. Those appear, because of their staged modular construction, to provide some shorter lead times. That will be discussed in later presentations.

On the demand management side, it is a little brighter picture, although we have quite a wide range, depending on the options, from three to 15 years from starting design until we get most of the penetration. This will be discussed in later presentations, but the demand management does

provide early energy savings because it comes on in small increments and some of it can be brought on fairly quickly. It also will avoid the long supply approvals that we will likely be faced with on our supply facility.

In terms of the reliability to our system and therefore the reliability of supply to you, our customers, we have found out, and you will be hearing more about it, that reliability is a high factor in terms of the customers' minds.

If we look at the reserve level, which we briefly touched on—it is related to the reliability of our supply—we can see that the reserve, without additional facilities beyond existing and committed systems, will deteriorate very rapidly below 20 per cent for the median- and higher-load growths beyond our need date in 1995.

This has significant impact on customers, first of all in terms of the higher cost, because we would be running higher-cost oil- and gas-fired generation to meet the requirements, more interruptions to the load and then finally brown-outs and rotating load cuts. This will be discussed in some more detail later on, under one of the strategy elements on reliability.

To sum up, and keep it to 12:30, I would just like to indicate again that there is no surplus capacity left on our system. The need dates we are looking at are the mid- to late 1990s. There are a number of factors which are important: to get on with the planning and a need for flexibility in terms of the many uncertainties. As a planner, and also as a customer, I feel it is very important that we try to complete this review and develop our plans without too much further delay.

Mr. Chairman: Thank you very much. As we agreed, we will have the question period when we commence the afternoon session. I will adjourn the public session of this meeting until two o'clock this afternoon.

I would also remind the members that there will be a short in camera meeting, prior to the afternoon session, at 1:45 in committee room 2. I would ask the subcommittee to adjourn to committee room 2 right now for a meeting, please.

The committee recessed at 12:30 p.m.

AFTERNOON SITTING

The committee resumed at 2:14 p.m. in room 228.

Mr. Chairman: I call this afternoon's meeting to order. We are going to begin by entertaining questions from the members relating to the material presented in the last part of this morning's session. I already have some on the list. Mr. McGuigan, you indicated you had some questions. Perhaps I will start with you.

ONTARIO HYDRO

Mr. McGuigan: I have two or three questions that tie together. We heard this morning that last winter we were down to eight per cent reserve. My recollection of last winter was that it was fairly mild; some of the people down in Florida had worse weather than we did. To what do you attribute that big demand during this past winter? Was it home heating? Was it industry?

Mr. Snelson: My recollection is that there was quite a severe cold spell and that was combined with fairly strong underlying growth for electricity demands. It was the combination of the two.

The cold spell was right across the eastern part of North America. Within four hours, Ontario Hydro, Hydro-Québec, New York and the New England utilities all experienced the highest loads they had ever recorded; that all occurred within a four-hour time period. When a cold weather snap affects one area of North America, it can affect quite a number of contiguous areas, which affects whether we can rely on each other in those sorts of circumstances.

Mr. Marriage: That occurred on January 14, which was around one of those real cold snaps. The other factor, of course, was the amount of generation we had available to operate. We had the Pickering units out for retubing, plus we had some of the other units still mothballed, two Lennox units, Hearn, and Keith, of course, being mothballed. We had some of the hydraulic with less capacity because of the water conditions. Between the two effects of the higher load and that cold snap, plus less of our capacity available, plus some of it locked in at Bruce as well, there were about 6,000 megawatts of capacity we had installed which we could not run for various reasons.

Mr. Rothman: We were also experiencing very strong economic and load forecast growth in general. As Ken said, I just want to emphasize that cold spell came on top of a base that was

higher than anticipated because we had stronger-than-anticipated general economic growth.

Mr. McGuigan: You have not addressed what I was looking for. I am not saying it is your fault. I am wondering if Hydro has not moved—you know, the talking furnace and so on in the past—into quite a heating load. This makes you very vulnerable to that day when it is extra cold as compared to years ago when your load was more industrial and lighting and appliances in the home rather than heating.

Mr. Rothman: It is hard to estimate precisely. The best we have been able to do recently is that we do not find evidence that the system is much more sensitive to heating load than it has been historically. It is very difficult to do that on a survey basis. It takes a while to get evidence about how many houses are heated with what fuel. When we work on an aggregate basis, we do not have a lot of evidence now which indicates that there has been a shift in the sensitivity of the system to heating load. I had one of my best statistical people work on that for quite a while and he did not find it. Like you, I expected he would.

Mr. McGuigan: In your end-use studies, though, surely you must know where your load is.

Mr. Rothman: We have base-year data and we are trying to update them, but it is difficult to get data at that level of detail. It requires having household survey data.

Mr. McGuigan: Which you do not have.

Mr. Rothman: We have not done a recent one. There are some Statistics Canada data, but they are available only at five-year intervals.

Mr. McGuigan: I think it would be interesting to know the answer to that. Perhaps before the committee ends, you could give us a shot at it.

Mr. Rothman: I will go back to my end-use people and see if they know more than I do. They may very well.

Mr. McGuigan: I have studied Ontario gas a little and of course they have this pool system down in southwestern Ontario where I live. It is such a wonderful system. In fact, the Ontario gas system could not exist without it having the pool, whereas you do not have a pool. Hydro never will have a pool until we develop better batteries than we presently have.

It also points out that there was really only one day you were down to eight per cent. Is that correct?

Mr. Marriage: I am not sure of all of the other days. That was the peak day in terms of when we had our highest peak demand. I could not tell you, without having to go back and look at all the records, what the situation was each other day.

Mr. McGuigan: I am a fruit grower and because our crops are so vulnerable to the weather, I am very much concerned and watch the weather. We did not have any low temperatures last winter, at least in southern Ontario, Niagara to Windsor. There was no period there that even came close to endangering the fruit crops. We did not have extremely low temperatures. We might have had a big drop one day, of course, when you get down into that way below zero factor.

Anyway, another side of that information that is interesting to me is that you had some outages due to water and due to retubing or whatever. Still, we had eight per cent surplus to meet a demand, which brings me to the point. You have a much more reliable system. Your transmission lines are much more reliable than they used to be. I can remember that when we had bad storms, a whole line of poles would go down. You do not have much of that any more. You have a much better system of seeing that things like what happened in New England do not happen. You have breakers in the system. You have computers and all that sort of thing.

Do we really need, today, 25 per cent reserves above that peak? Have you really examined that? Do we really need that much reserve?

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Mr. McConnell: We will be making a presentation later on the subject of reliability. At that point, we will be communicating to you that our criterion is not fundamentally expressed in per cent reserve, it is expressed in terms of the customers' needs, and we compute each year what the reserve is that we need. It typically falls between 20 and 25 per cent, but we base it on fundamental reliability to meet the customers' needs. We will be making a presentation on that.

Mr. Marriage: In some of the studies we did on the representative plans in this study, we did confirm that something in the neighbourhood of 20 to 25 per cent was still appropriate.

Mr. Snelson: There were some detailed studies done on that. They were not as thorough as the ones we did in the 1970s and they used some of that data, but they did re-examine, with

the system as it currently is, whether that is still appropriate and it appeared to be.

You might be interested to know that even today things are sort of touch and go on whether we have enough generating capacity in service to meet the load. While the committee was adjourned for lunch, I called in to our operating hotline in our control centre, and the peak load today is expected to be 19,155 megawatts, which is fairly close to the summer peak load we had earlier in July and somewhat less than the winter peak loads we have experienced. We are selling nothing to the Americans today. We are buying 900 megawatts between our purchases from Manitoba and Quebec, and we just about have the operating reserve that we require.

Michigan has adequate operating reserve today. New York is short of operating reserve today. New York does not have the reserves today that it feels it needs.

Mr. Rothman: I looked at that number too. We did not reach a winter peak of 19,200 megawatts until 1985.

Mr. McGuigan: I think the graph showed that the winter peak was gradually coming up, which made me wonder; we are gradually getting a bigger and bigger heating load and perhaps the whole thing should be examined as to whether you should be going in that direction or not, given the fact that you do not have a reserve system.

I want to move on to another point. Several people have said Hydro's aim is to meet the customers' needs. Maybe it is the customers' wants more than needs. It seems to me, if I can compare that to lawn watering this summer in a lot of cities, there were restrictions put on lawn watering and the public readily accepted them. There were not many cases taken to court over lawn watering, and I do not think Ontario has suffered a great deal by having brown lawns instead of green lawns.

What I am coming at is, do you ever question whether or not you should meet all those needs?

I was just thinking that in this building in the last couple of days, we had to turn the air-conditioner off because of the noise. At the same time, we have the air-conditioner in the corner pumping BTUs and calories out of this room and we have two big furnaces here in the shape of these windows, like greenhouses, pumping calories in. All it takes is a good set of drapes to cut that out. We have the incandescent lights up here pumping heat into the room. We do not seem to be having any thought in that direction.

For instance, what we have achieved in saving fossil fuels was directed by the US government when it set out that by 1979 they had to reach a certain miles-per-gallon fuel consumption in their fleets.

What I am questioning is this whole idea that we meet an uncontrolled, unplanned, unthought-of demand for energy out there, in light of the fact that it is now impinging on our environment, impinging on our resources or capital; it is impinging on about everything we have—our land space, etc.

Mr. McConnell: I would agree with the observation you are making. That was one of the reasons why we were emphasizing in our presentations—and you will recall the presentation made by our chairman—that, in terms of added value, we are talking about working with our customers to help them meet their needs in a more efficient way. The examples you gave would all be fair things which could be pointed out in trying to do that, but at the same time, we were not going to take an authoritarian approach to our customers and say, “We don’t really think you need your air-conditioner on; therefore we’re not going to provide you any power.” We would rather work with them co-operatively. Perhaps when Mr. Palmer comes on he will be giving further explanation of what we mean by that customer value.

Mr. McGuigan: Just one final comment. I found a certain amount of—I am searching for the right word for what the president said, which was just repeated, and then the panel saying that Hydro is meeting the needs. I find a bit of conflict in those two ideas. I am suggesting that some of these things should be revisited and looked at.

Mrs. Sullivan: I am not going to expect answers, because most of my questions relate to the load forecasting and I know there is going to be a fuller presentation, on Monday I believe.

There are a couple of things I would like to look at further, including the basic economic forecasting, the population base and labour force implications of that population base. My reading of the Ministry of Treasury and Economics assumptions indicate that it thinks you have underestimated population growth for the period and, as a consequence, the labour force impact. I would like to see further comments on the basis of your economic forecasting.

One of the other things I was wondering about is how you take into your forecast, changing industrial initiatives, including restructuring, whether economic or technological, as well as cyclical economic changes and fluctuations.

One of the other things that was not clear—and I do not know if this going to come up at another time—is how in the forecasting you would take into account changing cost of energy, particularly the price of oil or gas, over a period of time and the implications that would have on a switch to or away from electricity use.

Then there is another aspect, in regard to the demand management side, how you take into account demand management predictions. I believe there is a pilot project out at Guelph. Somewhere in some of this intensive documentation I read that it is not going as well as Hydro expected. I would like comments on that and how that would fit into the forecast, but as well, how you take into account the lead time for the introduction of demand management options—for example, retooling or retrofitting in those areas—how you take into account assumptions about reserve requirements and where your assumptions about supply side fit; for example, private sector generation, which has not been emphasized too much this morning.

You do not need to provide any answers today, but those are things I would like to follow up on.

1430

Mr. Rothman: While there is a further presentation on the load forecast claim on Monday, it is shorter than the one you have just seen and focuses only on the question of uncertainty, so the questions that you have just asked about the load forecast will not, under current plans, be addressed again. If you want answers to them—

Mrs. Sullivan: Well, do you want to start? I think that long responses would be required. Could I get something written that could be shared with our committee?

Mr. McConnell: Perhaps if we gave you a short answer, then we could see what we could get. If we started with the first one, which, as I understand it, was the question of the population growth underestimate, could you deal with that one first?

Mr. Rothman: I counted four questions and I think I can give you some short answers to them. Then if you want longer written answers, we can provide them.

The first was on the difference between our population and labour force forecasts and those of the Treasury. We have had some discussions with them, and I believe—in fact, I know—that in our last short-term load forecast, which we did just before the last Ontario Energy Board

hearings, we adopted higher population forecasts.

We currently have in later stages of preparation—in fact, I have in this binder—a draft of our new long-term economic forecast, on which our new long-term load forecast, which is, as I said, in the very early stages of preparation—we have not started to work on it yet. We have started to clean up the models and get ready. That will use the data from this long-term economic forecast, which incorporated higher population forecasts. So we have been talking to the Treasury about population forecasting. We have a population model that we use and we have put some new estimates into it.

If that answer satisfies, that is fine. Otherwise, I could provide you in writing with details of their forecasts and ours. I do not know what time frames may exist, but we can do the best that is possible on comparing them, if you like.

Mrs. Sullivan: I would like to see something further.

Mr. Rothman: Sure, we can do that.

The second question was the impact of industrial restructuring and economic cycles on the load forecast. We have recently become much more active at the level of forecasting for individual industries in Ontario. We have got out of the business, over the last four years or so, of doing forecasts for Canada. There are lots of people who do forecasts for Canada. We cannot put the resources into those that others can, so we basically use other people's Canadian forecasts. We have got much more into the business of doing forecasts for things like specific industries in Ontario, because there are not lots of people doing those. We can put more and better resources than others into that kind of forecast, and it is important for us. It is important for our energy management branch, for our incentive-driven demand management initiative and for our forecast as well.

Mrs. Sullivan: That would be a sectoral approach, would it, or a specific-industry approach?

Mr. Rothman: Specific-industry approach: Right now we have specific-industry models and we are doing some specific-industry forecasts. One of the things that we are starting to do is to take those specific-industry forecasts to do some bottom-up Ontario gross domestic product forecasting from industry approaches, and making sure that instead of doing top-down, we are building up from that.

As those models go, they do look at some restructuring issues and at some questions of

competitiveness. It is relatively early days; those models are only one or two years old at this point. But we have been putting a fair amount of our economic forecast methodology development effort into them, for precisely the kind of reason that lies behind your question. We suspect that an assumption that the economic structure will remain fixed is incorrect, and what we really need to do is to see how it is likely to change.

For economic cycles, we have really only tried to pay attention to them in the short-term forecasts. We know that there will be economic cycles of some kind in the 1990s, but I think it is really a mistake to try to say that there will be a recession in 1993 followed by three years of recovery in 1994 through 1997, as opposed to a recession in 1994 followed by four years of recovery in 1995 through 1999. So what we do is, once we get through the current economic cycle, in a recovery we will forecast the next recession and the start of the recovery after that. If we are in a recession, we will forecast the recovery after that. Once we get beyond that, we basically make a trend forecast based on the underlying concepts like the rate of potential economic growth, which really refers back to the kinds of population issues that you started off talking about.

Third was the question of the impact of energy costs on the forecasts. That is where our econometric models really come in handy. With our original end-use model it was so assumption-intensive that if we wanted to say what happens if we raise the price of oil or what happens to the electric heating load, we had to go into that model and change hundreds of assumptions about how many homes had electric heat.

With our new models we estimate statistically what the effect has been on electric heating load or past changes in oil prices relative to electricity prices. We can then put that into the home heating load part of the model and aggregate it up that way. So we are trying in our end-use models to bring in that kind of statistical relationship, which can help us with that sort of impact.

In the aggregate models, of course, that is basically what they are designed to look at. The aggregate models, the macroeconomic models and the top-down models are designed to look at those kinds of aggregate effects. That is exactly what we have used them for, so they explicitly model the impact of prices on things like electricity sharing. But it is in the industrial sector as a whole, for example, or in the residential sector as a whole, not things specifically like heating.

You have one question that I can answer, anyway, on accounting for demand management and predictions. The answer to that is that we have been doing that estimating for only a couple of years. We have not had many programs to base those estimates on, so I would say that right now our methodology is not anything I want to brag much about, but we are working on it and we will be trying very hard to incorporate the kind of information that we can get from experiments like that. We have been working very closely with the energy management branch on a number of these questions. Where they have been doing surveys they have been coming to us and saying: "OK, what kind of data do you need to be able to do your forecasts, and could you help? Could you get it from some of these surveys?"

We have been going to them and talking about that. Right now we are in the middle of a very large scale residential audit study, one of the largest done in North America, that we are co-ordinating for the energy management branch. Both we and they expect to get a great deal of data out of that.

Is that sufficient? I think we still are giving you a written response to the question on the comparisons of population growth forecasts, but is there anything further that you would like a written response on?

Mrs. Sullivan: I would not mind pursuing, although I understand that you are at very early levels, the kinds of demand management assumptions that are now included in your forecast load and the kinds of models that you are going to be using or that you are looking to develop in terms of that kind of forecast.

Mr. Rothman: I can give you an answer on that. I do not know how complete it is or how proud of it I will be at this stage. I am really hoping that we can be much more proud of that in a year or two.

Mrs. Sullivan: The other question related to the assumptions about supply side in the forecast.

Mr. Rothman: That is somebody else's.

Mr. Marriage: Could you repeat your specific question on the supply side?

Mrs. Sullivan: How, in the low forecast, would you account for assumptions that would be related over the longer term to the impact of private sector generation, for example, the supply side? I think more of what we heard this morning related to the demand side than to the supply side.

Mr. Marriage: You will be getting some presentations later on the nonutility generation or the parallel generation. Some of it, of course, in terms of what is put in by the customer to meet his own needs would be captured in the load forecast after it occurs, because it is just altering his demand. Other nonutility generation which would be put in to supply electricity to Ontario Hydro would be included along with the other supply options.

Mrs. Sullivan: But, in the longer term, if you do not have those relationships in existence now, how do you predict what the effect will be in terms of your total forecast for electricity need later on, say, in the year 2000?

Mr. McConnell: We have a presentation we are making on independent generation. It is appropriate that we answer your question this afternoon, but I think it might be more efficient if we made the presentation and then answered your question on that foundation. Mr. Palmer will be making the presentation.

Mrs. Sullivan: That is fine. Thank you.

Mr. Chairman: Mr. Rothman, if you can provide the written response to the clerk, she will provide it to all the members of the committee as well.

Mr. Rothman: Certainly.

Mrs. Grier: I wanted to ask a question about the table you showed us, figure 4-16, which is "Developments Not Captured in the 1987 Long-term Load Forecast." It seemed to me that in this world of uncertainty, there were some fairly major uncertainties here.

What are the prospects, before the work of this committee is completed, for us having anything from you as to how you intend to capture these kinds of uncertainties and build them into your forecasting?

Mr. Rothman: We have a routine forecast cycle and these are long-term questions. That cycle will be completed with the approval of the long-term load forecast in December, so we will not have anything available until then.

Mrs. Grier: Will you be doing your 1988 long-term load forecast?

Mr. Rothman: Yes, we will.

Mrs. Grier: That will not be ready until next December, you say.

Mr. Rothman: This December; December 1988.

Mrs. Grier: In December you would be able to give us a long-term load forecast that would take into account your estimates of the changes

due to management initiatives, the free trade agreement and the short-term update by the Ontario Energy Board.

Mr. Rothman: Yes.

Mrs. Grier: Could that be anticipated, even verbally or in some form so that the committee would at least know what that was going to be, before we complete our work?

Mr. Rothman: About the free trade agreement and about the update we have quantification now; that is, we have a study that suggests that if the free trade agreement is implemented, it would have an impact of about three per cent on the load in the year 2000. What we now have to do is reassess the probability of its implementation and whether we put it into the median economic forecast. If we do, it is a reasonable guess that we will have roughly a three per cent increase in load.

In addition, there is whatever impact there is of the short-term forecast update. We made a short-term forecast update for the Ontario Energy Board of about 2.5 per cent. What we have to think about for the long-term forecast is, was that simply a quicker recovery than we had expected, earlier growth than we had expected, borrowing growth from future years, and therefore we would expect slower growth in later years and not much effect on the year 2000; or was that an indication of a higher base from which we expect to grow at the same rate?

We really have not worked that out yet, but I would expect that the impact is more than zero and maybe as much as 2.6 per cent. It could be more.

Mr. Grier: I see. So for the purposes of us looking at and trying to anticipate load growth, we can take the figures you have given us here, the 2.6 for the short-term update and 3.1 for the free trade agreement, as the figures you will be taking into account.

Mr. Rothman: That would say a total impact of over 5.5 per cent on the load in the year 2000. We really have not started looking at that at all, so I would put my own bands on the amount that the year 2000 would change, assuming that we incorporate both of those, somewhere in the two to six per cent or seven per cent area. It is not as simple as adding 3.1 and 2.6—at least, I hope it is not.

Mr. McConnell: I think that perhaps the committee does understand that if Mr. Rothman is talking about a three per cent change in the absolute electricity demand in the year 2000, that should not be mixed up with the per cent per

annum growth rate we are talking about. For example, a 0.2 per cent change in the growth rate would produce close to a three per cent effect in the year 2000. So we are not talking about changing our 2.8 per cent up by three per cent; we are talking only about changing that a decimal point, if that is appreciated.

Mrs. Grier: I am interested in the discussion of the end-use load forecasting models, because that was something the last committee looked at and, I think, recommended you ought to do. I am glad it has begun, but I am a little concerned as I hear you describe it, because even the end-use planning is still based very much on assumptions and on econometric models. I am wondering what you have done over the last two years to prepare the kind of inventory that was discussed at the last committee as being necessary for good end-use planning and how many actual hard data you have as opposed to assumptions about the end use.

Mr. Rothman: We have improved our hard database significantly over the last two years. At the last hearings we said that, as a very minimum, we needed at least one person in each of the three sectors to be concentrating full-time on end use in each of the three sectors. We have achieved that. In fact, in most sectors we now have two people full-time. We have had some turnover in staff, so there has been some regearing for that, but we have been able to put a large amount of effort into both gathering historical data for Ontario and adapting those models.

I think it would be lengthy and difficult to go very far into what those models do and how. Basically, the models we are using do go to that detailed level, do look at floor space, heating loads, air conditioning loads, etc., within those sectors. For example, the models are starting to have to incorporate the impact on electricity load in office buildings of putting a lot more personal computers on people's desks. That load, as you may know, primarily increases the air conditioning load. Not that the computers themselves use much electricity, but they generate heat, and that has to be then taken up by the air conditioning system. We are gathering that kind of data.

In the course of doing the studies for estimating the potential for incentive-driven demand management, we had some consultants who were looking at equipment within the commercial and industrial sectors in order to be able to understand those sectors and how they could be improved. We got new data out of that. We got new data from various sources, and I

think we are very far along that road. I have been pleased with the progress. It could always be faster, but I think we have done very much the kind of thing we told the last committee we would be doing.

Mrs. Grier: One of the other recommendations on that issue from the last committee was some public scrutiny of the forecasts. You have given us a review process that essentially is a peer review. I am wondering what consideration was given to a more public or general review as you went through the process of arriving at your final forecast. Is that not a question for you?

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Mr. Rothman: I have not asked for or considered a public review of the load forecast process. That is as far as I can go with that, I think.

Mr. McConnell: As you appreciate, Mrs. Grier, we appear before the Ontario Energy Board every year and, of course, our load forecast is a very fundamental debate that takes place in terms of the question of setting rates. It is very rare that our customers do not have views on the subject of load forecasting, and there usually is a number of interveners who put forward their views. The Ontario Energy Board process does invite anyone to come forward and to ask questions and to put forward their views on that. I think that is a pretty regular opportunity for the public on that particular subject.

Mrs. Grier: On the question of the 60 per cent probability or the range within which you forecast, how does that compare with the range used by other utility systems?

Mr. Rothman: They are all over the place. Most of them have wider ranges. Most of them use an 80 per cent range. The North American Electric Reliability Council is using—

Mr. McConnell: Eighty.

Mr. Rothman: —80 per cent. That question is part of the topic of the presentation on Monday.

Mrs. Grier: As you get into more sophisticated end-use data and modelling, will that enable any reduction in that range of probability? What governs the need for that kind of a range?

Mr. Rothman: I will talk a good deal more about that range and how it is derived on Monday, but essentially, the choice of the range is somewhat arbitrary. The width of the range is determined by a methodology that essentially assumes that the future is no more variable than the past has been, and no less, and that our forecasts are no better than they have been in the

past but no worse. Most utilities use somewhat more favourable assumptions and come out with somewhat narrower ranges. I will talk about that on Monday.

Mrs. Grier: Thank you very much.

Mr. Brown: I wondered about the load forecasting in terms of the North American electrical grid. It seems to me the reserve number we use—is it 20 per cent we try to keep in reserve at all times?

Mr. Marriage: Around 20 to 25.

Mr. Brown: It would seem to me that number should be somewhat relevant to how much excess electricity might be in the North American grid at any given time that we might rely on if we had a problem. In other words, if there was not a lot of excess electricity in the North American system, we might need a bigger reserve than 25 per cent. If, on the other hand, there was less electricity, we would need more reserve. Is that a fair assumption?

Mr. Marriage: The calculation takes into effect the benefits we get by being interconnected with the other systems and the diversity between our winter peak and the summer peaks in the US. We have an allowance for about 700 megawatts in our reserve calculations for support from the other systems.

Mr. McConnell: In other words, Mr. Brown, when we calculate our reserve requirement, we depend upon 700 megawatts coming from our neighbours. Otherwise, the reserve level would be higher.

Mr. Brown: OK, we are doing this not in splendid isolation in planning for our electrical future.

Mr. McConnell: That is correct.

Mr. Brown: How do we predict the load situation in North America and also the supply, I guess, what we know is coming on stream, so that we would know how much we really need to have in reserve? With the range of what we might need that we were just talking about, it seems to me that somehow you have to get that all together if we are going to make some kind of sense out of it.

Mr. McConnell: That is correct. We have to take that into account when we determine our reliability requirement. That has to be taken into account each year.

Mr. Snelson: I think I can help here. The way the 700 megawatts was determined was that we assumed that our neighbours would basically plan to meet their own needs and not plan extra

capacity so that they could sell to us, and we worked on the basis that we would basically plan to meet our own needs and not rely either on huge surpluses for export and so on. When you put the two systems together, when you say, "Let's interconnect the systems," you find that overall there is less capacity required because sometimes when they have needs, we do not, and vice versa.

The fair division of that benefit is to say, "Let's have half each." This is an equitable division of the benefit of being interconnected. We cannot lean on them and rely on them providing extra just to meet our needs and we do not expect them to lean on us and expect us to provide extra to meet their needs. If we both plan to meet our own needs, there is a benefit to being interconnected and we have a share of that benefit which we take as part of our reserve benefit.

Mr. Brown: I guess my question, though, is are they doing that? Are they planning to do exactly what we are sitting here trying to plan to do today? Can we reasonably expect that the other utilities in this network, on balance— I do not mean every one of them will do it; some will do a little more and others a little less. But in the forecasts, are we forecasting that these people will meet the demand and supply the same way we are here in Ontario? I expect we have to have a real look at that.

Mr. McConnell: Actually, the question you are asking is a very difficult question to answer. I say that because I have been chairman of the North American Electric Reliability Council for several years and I not only have to appear before the Canadian federal government having to do with the Canadian situation but also on behalf of the United States in Washington. It is a very difficult question you are asking.

There are a large number of regions in North America, and Ontario Hydro is part of the so-called Northeast Power Co-ordinating Council. It includes Ontario, Quebec, New Brunswick, all the New England states and the New York utilities. We are, of course, also interconnected with Michigan. I guess the bottom line is that the relationship between the utilities in the United States and the regulatory agencies and the state governments and the US federal government is such that the United States is in all probability heading towards very serious problems in the 1990s.

Mr. Brown: Following from that, in order to ensure our supplies, would it be better for us to look at, realistically, larger reserves than we presently are looking at?

Mr. McConnell: That is a fair observation. To be more specific, there are limitations. For example, the power situation in California is somewhat irrelevant to Ontario. On the other hand, the power situation in Michigan and in the neighbouring states to Ontario, New York and so on, is much more relevant. Those are the states we have to appraise in terms of determining how dependent we wish to be on their power situation if they do not make timely decisions. Just as we have concerns about timely decisions, we also have concerns about our neighbours making timely decisions. Your question is a very astute one, and it is not easy to answer.

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Mr. Brown: I just have one other quick question. At the present time when we sell power or we buy power, do we realize a profit in the sale of our power right now? Does Ontario Hydro make money?

Mr. Marriage: We do not make money, but we do save the customer some money in being able to reduce the electricity rates.

Mr. Brown: You make money.

Mr. McConnell: We make money on behalf of our customers. We make profits on behalf of our customers. It reduces the rates. But as we said this morning, we do not commit facilities in Ontario for the purposes of making a profit.

Mr. Brown: What I was suggesting though was that if we do save our customers money by doing it and we do have excess capacity in the system, that does not hurt us at all.

Mr. McConnell: No, it enhances our position. I guess what you are getting at is the question of what are the consequences if you find yourself in an oversupply situation and what are the consequences if you find yourself in an undersupply situation? I think by the answers we have already given, we have made that quite clear.

Mr. Runciman: That prompts a question. You mentioned that the export sales have had the impact of reducing rates in Ontario. Part of your mandate is to sell at cost. Without the exports you would not be able to achieve that mandate? Is that what you are suggesting?

Mr. McConnell: We sell at cost to the customers of Ontario, but when we sell to our neighbours, that is to say to New York or Michigan or elsewhere, we obviously want to make a profit. So we have to differentiate the sale value to a neighbouring utility, which is a different set of principles from how we price power to our own customers.

Mr. Runciman: I thought that is what I said in my question. In any event, you said that that differential had the effect of keeping the rates down to Ontario consumers?

Mr. McConnell: Yes.

Mr. Runciman: I am saying that what you are saying is that export sales are really enabling you to maintain or follow through on your mandate of power at cost. Without it you would not be able to provide power at cost to Ontario consumers.

Mr. McConnell: If we did not sell any electricity to neighbouring utilities and we did not buy any electricity from neighbouring utilities, we would still be selling power at cost to our customers. The cost would be somewhat higher, that is all.

Mr. Runciman: The cost of operating your facilities would be somewhat higher, you mean?

Mr. McConnell: No, the cost of operating our facilities would not be higher. It is just that our customers would bear the cost of operating our facilities. If we sell at a profit, we can lower the net cost to our customers.

Mr. McGuigan: It is a dividend you pay really.

Mr. McConnell: Yes.

Mr. Runciman: You mentioned forecasting, Mr. Rothman, I guess in response to Mrs. Grier's question. Does anyone else do forecasting? When you are up to appear before the Ontario Energy Board, does the board on occasion carry out its own forecasting efforts? Is there anything available to the board to allow it to have an appraisal from another perspective?

Mr. Rothman: There are three other organizations I know of that regularly do forecasts of electricity demand in Ontario. Actually there are four. Those are the National Energy Board; the federal Department of Energy, Mines and Resources; Data Resources of Canada, which is an independent consulting group; and the Ministry of Energy. Those are the people who do long-term forecasts which is what I have been talking about here.

For the Ontario Energy Board's purposes we are always talking about short-term forecasting. They usually hire as their consultant Dr. Leo de Bever, who is the chief economist at Crown Life and who does do a relatively simple, short-term forecast of electricity demand in Ontario for the board's purposes of comparison and to give them an alternative.

Mr. Runciman: You mentioned in terms of the free trade agreement that you are going to

reassess the probability of implementation. How are you going to do that?

Mr. Rothman: We are either going to have to put it into the median forecast or not, and that is what we are going to have to decide.

Mr. Runciman: You are simply going to wait for the results of the federal election, I guess.

Mr. Rothman: No. Our process will not let us wait. I have a direct forecast here that is a draft that has, or has not, the free trade agreement in it. It has not been approved yet. We are just starting through its approval process now. In fact, I have not read the draft yet.

Mr. Runciman: You might as well get Environics involved in your forecasting.

Mr. Rothman: We have to forecast all kinds of government policies. As one example, in our last forecast, we forecast that there would be an impact on the inflation rate in Ontario by the implementation of the federal sales tax reform. We have also reassessed that probability.

On a longer-term basis, we really have to forecast what kind of monetary and fiscal policies the government of Canada will be pursuing, because that affects our inflation, and other, forecasts. It is not a new game. It is not a fun one, but it is not a new one either.

Mr. Runciman: The chairman may bring me to order on this question. I am just curious, as the chief economist for Hydro and the economist working for the Treasury in Ontario, obviously you have come to different conclusions in respect of the free trade agreement. The government has taken a position in respect to the free trade agreement that is it is going to have a negative impact on the economy of the province. You have a somewhat different view.

Mr. Rothman: Treasury has said that it believes its impact on the overall level of activity in the economy will be positive after some adjustment period, which is what our position is. There will be a slight negative during an adjustment period, and then the impact will be positive.

Mr. Runciman: So there is no difference in view from the economist's standpoint between the government and the crown corporation.

Mr. Rothman: Nothing is free. It is a valuation of what you get for what you are paying, and we agree that there are some costs. There are adjustment costs and other potential costs. I am just saying that if you measure it only by the level of economic activity, we expect that the free trade agreement will ultimately raise the level of economic activity in Ontario over what it

would be without that, but that is not free. You can have free trade, but there are costs to that.

Mr. Runciman: Right. OK, on a slightly different tack, Mr. Marriage, I guess, mentioned in response to Mr. McGuigan about the problems in January of this year in purchasing hydro from Manitoba. You said you got some short-term supply from Manitoba at some period. Someone mentioned that.

Mr. Snelson: Today we have some supplied from Quebec and Manitoba.

Mr. Runciman: What price are you paying for that per kilowatt hour?

Mr. Snelson: I would have to go back and consult with the operations people, because I just got this off the hotline, which told me only megawatts. The price we would pay would depend to a fair degree on the circumstances. Under most circumstances, when we are buying from Quebec and Manitoba, it is an economy purchase because they have surplus hydro power. We say: "Well, if we take that hydro power from you, we can save some coal in our coal-fired plants, which would cost about two or two and a half cents a kilowatt hour. As long as you can supply it less than that two or two and a half cents a kilowatt hour, we will buy it." In those cases, we make money by buying power. So we make money for our customers both by buying power and selling power in the economy market.

On a day like today, this may very well not be an economy transaction. It may be a transaction which we have to undertake to be able to meet our load, and then a totally different set of pricing principles starts to apply, and the price could be quite high. I do not know what the price would be at the moment.

Mr. Runciman: Are there implications in that respect in terms of the negotiations that are ongoing?

Mr. Snelson: This is an entirely separate matter from the long-term negotiations with buying and selling. These are day-to-day transactions with the generating plant that is presently there. Can the long-term transactions that we are talking about build a generating plant in Quebec to provide us with a long-term supply over 20 years or some such period, which may not start for eight or 10 years? These day-to-day transactions are a short-term business. You cannot depend upon having this sort of supply available in the long term.

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It is the same with buying from Quebec today. In the winter peak period that we were talking about, we were selling to Quebec because it was short. So Quebec, in the short term, does not have a dependable capacity surplus to sell. They have to build a generating plant if they are going to provide us with dependable capacity over the long term.

Mr. Runciman: Mr. Rothman had a graph before us about total electricity consumption dropping in terms of the gross national product. You showed that. I am just wondering, you did not have anything in terms of electricity as a proportion of the total energy consumption during that period of time. You had them dropping with respect to GNP, but did electricity as a total proportion of consumption of energy increase over that period of time?

Mr. Rothman: Yes, it did. Over the latter part of that period, total energy to GNP was dropping while electricity to GNP was increasing. So energy was increasing its share.

When you look at charts like that, you have to remember that over that period, electricity's price was much more stable than that of the fossil fuels. Electricity prices were rising in real terms but rising much more slowly than those of the fossil fuels. Security of supply was clearly there.

So part of that is a price reaction. Part of it is a technological reaction, that technologically, electricity can substitute for other fuels in a lot of uses just on an efficiency basis.

Mr. Runciman: We can pursue that a little further another day.

One thing that was considered in the past was the time-of-day metering. I guess it was ruled out at some point in the past because of concerns with respect to northern Ontario. Are any of you familiar with that proposal?

Mr. McConnell: Yes, we will be addressing that question. That was the question of the time of use of winter versus summer. We will be talking to you about that.

Mr. Runciman: You are still proponents?

Mr. McConnell: Yes.

Mr. Matrundola: I would like to ask the panellists, according to figure 4-11, a recent forecast for the year 2000 shows, from 1984 to 1987, a peak from 28,600 to 30,400. This only goes to 1987. It does not go to 2000. I see that you have made some sort of increased allocations on the previous page. What do you forecast the peak will be, say, around the year 2000, or for that matter, the year 2010?

Mr. Rothman: This chart shows our current forecast for the year 2000, which is 30,400 for the basic forecast.

Mr. Matrundola: It was made in 1987 for the year 2000?

Mr. Rothman: Right. We have not yet made 1988, as Mrs. Grier asked.

Mr. Matrundola: I understand. So you forecast that approximately 30,400 megawatts of electricity should be necessary and sufficient for the year 2000, as of now?

Mr. Rothman: Before the effect of Ontario Hydro's demand management.

Mr. Matrundola: In figure 5-8, I see the different costs of energy, hydraulic, nuclear and fossil. Obviously, I have heard before from previous comments that the cost is more for fossil to generate energy, yet the depreciation is less. At the same time, we see that on hydraulic, the unit for depreciation and finance is 0.4; for nuclear, 2.2, and fossil, 0.9. But the total from 1 for hydraulic goes to 3.2 for nuclear and 4 per unit for fossil. My question is, why are we also producing fossil energy? Is it for backup? For what reason does it cost so much more?

Mr. Marriage: One point I tried to make in the quick presentation was that these are just the figures for 1987 and therefore all of our existing generation. Some of it we have not added to for a decade or more—the hydraulic or the fossil—in terms of any major additions, whereas with the nuclear here we have put in eight units between 1983 and 1987. That produces a fairly high depreciation and finance cost. You cannot take this as if you were going to build or operate a single plant and compare it. I just try to give a flavour for how much the generation on our system is costing right now.

In terms of why we use fossil generation, as I also try to show in terms of the energy, nuclear and hydraulic are good to meet base load energy running all of the time because of their low fuelling cost, as we can see here; but we have a load that varies, and, for short periods of time and peaking, fossil plant is the cheapest in terms of cost for that operation. Also because of contingencies in terms of hydraulic contingencies and everything else, the mix of hydraulic, fossil and nuclear provides the best overall cost and systems.

Mr. Matrundola: Thank you. On figure 5.9, on the next page, we see a variety of costs for Winnipeg and Montreal and then Ontario municipal and Ontario rural. There is a discrepancy there of about 25 per cent or 50 per cent. If I

understand correctly, Ontario is a great producer of hydro. Why do we have this great discrepancy, apart from the United States? I understand when we export, we make money on it and so forth. Why the difference between Manitoba and Quebec and Ontario?

Mr. Marriage: Again, as I tried to indicate, Manitoba and Quebec are not quite but almost 100 per cent hydraulic, whereas in Ontario we are only producing, I think, 21 per cent or 22 per cent from hydraulic; the rest is coming from nuclear and coal. Therefore, we cannot compete against the total hydraulic system.

Mr. Matrundola: Do I understand that we have less hydraulic facilities in Ontario than they have in Quebec and Manitoba?

Mr. Marriage: Yes, much less, we have only a quarter.

Mr. Matrundola: Briefly, have your previous forecasts been pretty well on target to date?

Mr. Rothman: Until about 1982 or so, our forecasts were generally running above the actuals. Remember, we had that big recession. We did not expect as rapid a recovery from the recession as we have had, and since 1982 our forecasts have generally been running under the actuals. We have been forecasting for less electricity demand than we have actually experienced.

Mr. Matrundola: Of course, now we find that we need more than we had forecast.

Mr. Rothman: Yes. As that table you saw points out, we keep raising our forecasts and the demand keeps growing faster than we raise them.

Mr. Matrundola: I see. I suggest that we should exercise greater care in making forecasts for the future in order to be more or less on target, although it is pretty difficult, I do understand, because it involves a variety of different agencies and bodies and the economy and the people who might be immigrating here and so forth. Very well. Thank you very kindly.

Mr. Chairman: Any further questions? Seeing none, I guess that finishes the business of our morning session. Just one second. Mr. Richmond has a question here.

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Mr. Richmond: Mr. Marriage or Mr. McConnell, just a point of clarification here, because I know this has come up and it will invariably come up in our future deliberations.

On the purchase question, the option of buying from Quebec or Manitoba, I know some committee members are quite keen on this. If you do not

have it with you, maybe you can table something with us. On page 5 of chapter 6, you mention that Hydro recently concluded a five-year purchase agreement with Manitoba Hydro.

Granted that is not a great amount—I have seen some of the assumptions to buy up to 2,000 or 4,000 megawatts, some of the larger blocks of power—but do you have handy what price Ontario was able to conclude to buy this power? Briefly, what factors went into establishing that price? If you do not have it, I think it would be germane just to table it in written form, but if you want to respond now, by all means.

Mr. McConnell: You are quite right. It was not a major purchase relative to our needs. It was for the period 1998 to 2003. It did not require new transmission to be installed and it came out of commitments that exist in Manitoba. We can give you some information having to do with the price. That information is already held by the government.

Mr. Richmond: Granted what we are thinking of are the larger possible purchases.

Mr. McConnell: I think it is important that you not be misled. What we make on a small deal out of existing facilities is not necessarily the same as committing new facilities. I think you appreciate that.

Mr. Richmond: I do.

Mr. Chairman: Mr. McConnell, I guess the next set of subjects you wanted to cover were chapters 7 through 10, is that right?

Mr. McConnell: That is correct.

Mr. Chairman: I am wondering at what point we should pause for questions. It might be helpful for the committee members, as things would be fresh in their minds, if we could stop after, say, each subject, or if we cover the criteria and then go into the demand option and stop after demand option for questions and then stop after each one of the options, because I am sure there are going to be questions. Rather than waiting for a block at the end, we might just stop briefly between each.

Mr. McConnell: OK. We will proceed with chapters 7 and 8A.

Mr. Chairman: Sure. We will do chapters 7 and 8A and then pause to see if there are any questions and then do 8B, 8C and 8D. We will see if we can get to chapters 9 and 10. Let's be realistic.

I am going to ask the clerk to turn the air conditioner back on, so if people could remember to speak directly into the mikes, we will have to make do. Sorry to those sitting right next to it,

but I think the fellows in the back of the room are suffering. Mr. McGuigan's furnace has heated up the room quite efficiently.

Mr. McConnell: At Mr. McGuigan's suggestion, we can cut down the heat by turning lights off.

Interjections.

Mr. Marriage: What I would like to do now is address chapter 7, which looks at the question: What criteria will we use to choose the best plans or options?

In evaluating plans and options, we must look at many factors. In addition to this, the draft strategy, which you are deliberating over now, provides some guidelines for making the decisions. Also, government provides some broad policy direction. The evaluation will have to look at government policies, Ontario Hydro policies and the strategy elements, as well as the various factors I will be discussing very briefly.

One point I would like to make is that in a decision-making process, this is going beyond our strategy. It is very complex and requires a lot of human judgement and it takes into account not only our evaluation, which I will be discussing, but the customer preferences and the general public values, which will be touched on later in chapter 9.

When we started the demand/supply study, we looked at a large number of options to meet future demands. Moving from that first phase of the options into the second phase, we had to come up with a screening method to reduce the number of options. This screening method used what we called a standard cost and that looked at the cost of the option, how it met the load reliably and the life of the option.

It really just looked at an increment in meeting load from a supply option or a reduction in the demand through demand management which would allow meeting an incremental load without supply. It is only a rough screening, and for decision-making in terms of options and plans, incentive levels, we looked at a much more comprehensive set of evaluations, which I will get to.

In terms of evaluating plans, which all organizations have to do, and making decisions, we build up the plans from the options and we look at the plans in terms of meeting the system requirements and meeting the various criteria, and there are many both monetary and nonmonetary criteria. Some of the criteria are basic requirements that an option must meet to be even acceptable. Others, which I have called compar-

ative factors, are used to rank the various acceptable options.

The point I would like to make is that the criteria are not static. They will change with time because of conditions and values, people's values. There will be tradeoffs that have to be made in the decision-making process. The higher costs for environmental protection or the higher costs for reliability are just a couple of examples.

The basic requirements are outlined here. There are five of them.

First is technical feasibility. Again, all options have to meet this to be acceptable. They have to be sound technically, they have to meet the various requirements, and Mrs. Sullivan raised the question earlier in terms of the quality of supply, whether it be the frequency deviations, the voltage deviations and things like that. These are some of the technical requirements that have to be assessed.

Second, in terms of reliability, it means looking at the number and duration of outages and also the generating reserve margin that we talked about this morning.

Third is environmental acceptance. We must meet, of course, all of the regulations, provincial and federal. We also undertake measures to mitigate the environmental impacts of our plans and facilities, and those costs are taken into account.

Fourth is social acceptance. We have to look at both the employee and public safety. We have to look at local impact in terms of construction of our facilities. Again, we carry out studies to identify these impacts and take measures to mitigate the impacts, and those costs again are included.

Last, but not least, there is customer satisfaction in terms of the quality of the service, overall service that is provided and fairness in terms of allocation between costs and benefits.

These will all be discussed in more detail starting tomorrow and following with the discussions on the strategy elements related to these.

The other comparative factors are what we call the primary factors, which are related to costs, and these are the total customer cost, the financial impact in terms of rates and borrowing, risks and flexibility. In addition, we look at what we have identified here as secondary factors, more related to preferences in terms of the provincial economy and the energy security.

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I would like to briefly touch on some of these factors. In terms of the total customer cost, part of our main planning principle, certainly in the

system planning division, is the lowest long-term cost. This is cost of the electricity service. We are defining "electricity service" in this document as the function that electricity provides, whether it be cooling, as it is today, heating, lighting, motive power; not electricity for itself but what the electricity provides.

We have also defined in our document the total customer cost of electricity service, which is the utility's supply cost plus the customer's utilization cost. Examples of these are, on the supply side, the capital for facilities, the fuel for operating our system, transmission losses, operation, maintenance and administration. On the customer side, examples are increased insulation, replacing inefficient appliances with more efficient appliances, buying some more efficient equipment, whether it is heat pumps, heat exchangers or energy storage facilities to provide a more efficient supply.

The other important thing in this total customer cost is that we look at the costs over the lifetime of the option, or the planning period, if that is even longer. This includes costs for design, construction, operation and decommissioning of our facilities, and the environmental and social costs, as well, to mitigate those.

In terms of the financial impact, as I indicated earlier, we look at the impact on both rates and borrowing. These again also have to be looked at over a long time period, because the various options have different patterns of both capital and operating costs. We touched on those this morning in terms of hydraulic and nuclear, which will have high costs in capital at the front end but low fuelling costs over their lives, as opposed to fossil plants, which will have lower capital costs but higher fuelling costs over their lifetimes.

Also, the timing of the costs will vary with options. Large expenditures are made on the supply side before any electricity is produced, whereas if we purchase electricity from nonutility generators or neighbouring power systems, we pay for it when we take it, in most cases.

In terms of risks and flexibility, in any project there are a number of inherent risks associated with its costs, construction schedule, operating performance and customer acceptance on the demand side. These are looked at through various sensitivity studies. There are also a number of nonproject risks which we have talked about in terms of the uncertainty in the load forecast, fuel prices in the future and interest rates. These are looked at through sensitivity studies looking at various scenarios where we

take the various factors together and also through probabilistic decision tree analyses.

We have already noted several times the range of uncertainties we are faced with and the need for flexibility and having plans that are adaptive to the changing circumstances.

In terms of the provincial economy impact, electricity is a very important source for business and industries in terms of overall operation, economic performance and industrial competitiveness. It is also important in terms of where they locate and their expansion. Also, the options implemented will have impact on jobs and other spinoffs in the economy. Those have to be factored in as well.

In terms of energy security, diversity in capacity mix and fuel sources are important considerations. I feel that right now Ontario Hydro has a good mix of resources. It may just be worth pointing out that before 1950, as I think has already been mentioned, we were totally dependent on hydraulic power. In addition to the mix, the operation of the plant between base load and peaking is also important in being able to deliver energy under a wide set of circumstances.

Also, the accessibility to the resources—coal, uranium, oil—and their delivery are important. Lorne McConnell will be discussing preferences in a later presentation on the strategy associated with the primary energy sources.

Again, looking 20 years or so into the future, the long-term price of fuel is also an important consideration. Really, what we have heard through the consultation programs is that our customers do not want to have large price increases or interruptions to the supply as a result of interruptions in terms of the primary energy sources we use in generating electricity.

That concludes my presentation on the criteria.

Mr. Chairman: I guess we should move to the next section, on demand reduction, before we entertain questions. I notice, though, Mr. McConnell, the membership of your panel has changed. I wonder if, for the benefit of Hansard, you could introduce the new members.

Mr. McConnell: Yes. The next speaker is Hedley Palmer. He will be speaking on demand management. He is in our energy management branch and is responsible for the planning in that branch. Bill Penn will be addressing the supply function. He is from our design and construction organization and he will be talking about the supply contribution.

I would like to call on Hedley Palmer now. While Mr. Palmer is walking up to speak, I did

not realize that my answers to the questions Mr. Brown was asking me a few minutes ago would be quite so prophetic. We are short of power. A public appeal will go out tomorrow to cut back on power consumption in Ontario all day tomorrow. We will not be able to meet our requirements and we are not able to get the 700 megawatts we talked about. We were not able to get anything from the United States. We are getting something from Quebec; some 550 megawatts. It does not quite meet the 700 megawatts. I would like to add that public appeals and voltage reductions are in fact included in the calculations that we allow. We assume we will do that from time to time, so we have not quite got into the marrow yet. This is still acceptable, provided it does not go any further.

Mrs. Grier: Mr. Chairman, has Hydro organized the heatwave so that it will sort of set the stage for this?

Mr. McConnell: I am sorry. I did not hear that, Mrs. Grier.

Mrs. Grier: Just as well.

Mr. Chairman: Thank you, Mrs. Grier. Perhaps we will have Mr. Palmer proceed now.

Mr. Palmer: Mr. Chairman, ladies and gentlemen of the select committee, my subject, as you can see on the overhead, is what options are available to consider in demand management.

To begin that, I would like to show you a remarkable device, together with some attached paraphernalia, that can be used to trace power flows through the industrial process and in commercial buildings. Locations of extravagant electrical use can be easily identified and fixed. It also identifies time-of-use rates and load-shifting opportunities in those same industries and commercial buildings. Savings in electrical energy resulting from its use generally run about five per cent, sometimes higher.

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Hydro has about 300 of these in use throughout Ontario and has had a major role in their development. This device is called the electronic recording ammeter; ERA for short. Like baseball's ERA, the lower the number, the better. I want to add it to the list of examples I gave to the select committee on energy some two years ago, which show on the slide; I will not bother to repeat them. There are many others I could add to the list. The idea that Ontario Hydro can assist customers in more efficient energy use is by no means new.

In that very same spirit today, we are vigorously pursuing demand management in two principal areas. Those areas are load shifting and electrical efficiency. In addition, we are continuing to help customers make better use of electricity, mainly by improving the industrial process. We call that industrial process efficiency.

Turning to the area of load shifting, the potential in the system is about 1,000 megawatts for that. What I mean by load shifting is moving loads from the peak to the off-peak periods. We could use more of that today and tomorrow.

I am sure you will have no difficulty recognizing that the limit of the amount you can shift is when the off-peak threatens to become the peak. That number, for the Ontario Hydro system, is, as I have already said, 1,000 megawatts. Within that limit, we have three ongoing activities, and one that Mr. Runciman talked about earlier: time-of-use rates, interruptible rates and load control. We anticipate that time-of-use rates will be used to bill all large-use industrial customers in the province and some municipal utilities, starting January 1, 1989. Our forecast for these rates is that they will induce load shifting and peak reduction on the order of 500 to 600 megawatts over the next decade.

Our experimentation and testing with residential and commercial customers tells us there are some opportunities for peak shifting there, too. If the fact has not already come to your attention, we have had some 500 residential customers on time-of-use rates in Ontario since 1982. The purpose of that was to run a test market to get the reaction of residential and small commercial customers to time-of-use rates on a broad scale. The information we have gathered over these six years is very promising indeed.

We have another way to shift peak with rates: interruptible rates for large industry. Many US utilities have recently and suddenly discovered the value of interruptible rates for demand management. Such programs have been in use here in Ontario for many decades. Industries which can adjust their load to these rates save money through the discounts we offer and the system saves peak capacity equivalent in total to about one large nuclear unit, and that is not an inconsiderable saving.

Here there are some further opportunities to be explored, as well. Time-of-use rates and interruptible rates together have some very strong customer advantages. They open the door to reduced costs for the users and they save Hydro

capacity. It is a win-win situation for both users and Hydro.

You may ask, though, if there are comparable opportunities for residential and commercial customers. My answer is, some. Time-of-use rates will have a place, as I have already said. Also, in the late 1970s we foresaw that some domestic and commercial appliances might have load-shifting potential. We spent considerable time, money and other resources in the period from 1979 through 1983 testing that idea. The background work we did is invaluable in our thinking now, some four or five years later.

Right now we are extending some of those studies and looking at some promising new technologies that could be economically used to control some customers' loads on a very wide scale.

Heretofore, to tell you a bit of the sad story, technologies for large-scale application have not been especially robust and have tended to be quite expensive. There is also considerable customer resistance to load control. Putting those two things together, some uncertainty about the technology and the fact that customers are not necessarily all that wild about having their loads controlled, we are approaching the subject rather cautiously. Notwithstanding all that, we do anticipate that we will have very little difficulty reaching the system limit of 1,000 megawatts by the year 2000.

The second important area is energy efficiency. This area is less easily defined and it helps to get a grip on it to divide it into two parts: electrical efficiency and process efficiency.

Electrical efficiency covers a wide field. It runs the gamut from home insulation to commercial lighting to high-efficiency motors in industry and many other applications in between those. Among all the possibilities, we have identified quite a few with good economics for major programs. Examples are: insulation and ventilation improvements in electrically heated homes; similar work in commercial buildings, along with lighting improvements; and applications of high-efficiency motors in industry and street lighting in municipalities.

Electrical efficiency itself falls into two further broad subdivisions. The first covers applications where customers are not likely to undertake measures without financial incentives from the utility or government. The goal we have set ourselves for these incentive-driven electrical efficiency measures is 2,000 megawatts by the year 2000.

The second part of the electrical efficiency definition covers those things that customers are likely to undertake themselves, and sometimes do, but often they do not because they do not know about them or they have insufficient information to act or they have no place to turn for help. Our recently announced energy centre for Toronto will meet this need locally and generally, throughout Ontario, customers can go to Hydro offices for assistance, and those offices may belong to Ontario Hydro or the municipal utilities in the province. Advertising is another major tool to spread the word on energy efficiency, as are bill stuffers and many other things.

May I show you one? We produce a number of booklets of this kind, some seven or eight so far, mainly for use by consultants, contractors and other kinds of installers. We put on workshops to launch them, and then they can be ordered on request. For this particular one, we have had close to 10,000 requests. Elsewhere in Canada we have had 20,000 requests for it, and we finally got so sick and tired of sending it out to other places in Canada that we have persuaded the Canadian Electrical Association in Montreal to take it over from us. So it kind of fell into the nature of a best-seller. There is a lot of good information in there about how to install lighting in commercial buildings and where you can buy the most efficient stuff and all that.

Before I move away from this subject, I want to make a very important point and I want to be sure you all understand the point. No, we have the wrong slide up. It is the one that says "2,000 megawatts" on it.

We are talking here about 2,000 megawatts of demand reduction on the Ontario Hydro system. To get that, we probably have to influence some 4,500 to 5,000 megawatts of customers' equipment that they have in their plants. The same is true for the information, because not every machine that every customer owns is on the line all at the one time. So we know, in total, what we want to achieve. In order to achieve that, we have to go after many thousands more kilowatts in the customers' premises.

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Let me tell you what the gut issues are in this business, as I understand them. Will the customers in sufficient numbers accept these programs we plan? If they do, will there be sufficient commercial infrastructure throughout the province to carry them? I am really talking about whether there will be trades and all that kind of thing for major programs. Just think of doing

something with 400,000 electrically heated houses in the province to get some notion of what the magnitude of a program in that one particular area might be.

Can the inherent customer inequities in the application of energy-efficient measures be managed to the general satisfaction of all customers on the system? Later, we will have something further to say about those issues.

Finally, on the matter of industrial process efficiency, which is quite different, would it surprise you to know that many customers do not see their prime role in life as being load shifters and energy savers? I think you would not believe that. But for many customers, the prime interest is to produce good products and remain profitable in a turbulent, competitive world.

Often these days, the competitive edge is gained by bending new technologies to practical application. More often than not these days, these technologies are electrical. In the past two years we have helped industries, large and small, in the adoption of these technologies to their needs and spent about \$1 million doing so. Sometimes that assistance helped reduce loads, sometimes it increased them and sometimes it did not change them at all.

In all cases, our purpose was simply to assist customers—the consultant role our chairman spoke of in his opening remarks—to help them make the best use of electrical technology, to enhance their competitiveness, and through that, the prosperity of Ontario. We believe this is the critical and important part of demand management and perfectly reflects the Ontario Hydro corporate goal of customer satisfaction.

In the upcoming detailed presentations next week, we will present program examples, case studies and test programs to supplement the presentation this afternoon. We will also outline our short- and middle-term plans and initiatives. All of this will be done to illustrate our commitment to demand management, our confidence in the results and to demonstrate its important role in our strategic principles.

Those are my remarks on energy-reducing options, on demand management.

Mrs. Grier: I would be interested in knowing what kind of forecasting methods you used to come up with those estimates of what is available from demand management. We know the very detailed apparatus there is for forecasting load. Are the same kinds of techniques applied to finding out the figures you have mentioned?

Mr. Palmer: We used quite a wide range of techniques. In the residential market for more

than 20 years now we have been doing appliance saturation surveys, so we know in fairly precise terms the number of appliances installed in Ontario homes—refrigerators, washers, dryers, kinds of heating systems and so on. There is a good base in the residential market.

We also have run test audits in residential homes to find out, particularly in electrically heated homes, what kinds of measures could be adopted in order to increase their efficiency. We do perhaps 1,000 or 2,000 homes through the province and then we extrapolate that number into the total number of homes.

We have other sources of information for the commercial market. We know how many square feet of commercial space there are in the province. We know the rate at which renovations take place from other studies. That gives us a good handle on what is happening in the commercial market. In the industrial market, our techniques are not greatly different from that. There are data sources and we test them through detailed audits and so on. We have been doing that over three or four years now.

Mrs. Grier: Could you give us a breakdown of those targets as they apply to the residential, commercial and industrial sectors?

Mr. Palmer: I cannot off the top of my head, but they are included in the material we will be presenting to you next week.

Mr. South: You mentioned that the customers want you to provide more consultative services on their use of electrical energy, but I wonder if you are not trying to do too much for the customers free, from other customers' point of view, and loading up the cost to Ontario Hydro.

Private businesses have gone into the business of saving industries money. They will come in and guarantee to cut their heating bills down to a certain level and they will take a piece of what they save them. I would think Ontario Hydro should have somewhat the same system, where you are charging a fee for service. If you are going to cut a customer's use of electrical energy and save him money, why not make him pay for it? Or why not let entrepreneurs be out there in the business of saving customers energy?

Mr. Palmer: On the business of these outside agencies, we are quite delighted to work with these people. As we look forward to demand management programs, we anticipate the customers are going to pay some of the cost too. We are not going to pay all the cost. That subject will be dealt with next week as well in some detail.

Mr. South: Has any thought been given to looking at the average energy consumption of an

average house and then charging those householders at a higher rate when they go beyond that? It would seem like a very good incentive to have a constantly accelerating rate. I think some people are very sloppy about their use of electrical energy, very wasteful, very self-indulgent. Are you thinking of setting an average consumption amount for a household and charging at a rate, and then putting on an accelerating rate for higher use?

Mr. Palmer: No, we are not. We have considered this kind of thing. Just consider all those very rich Torontonians who leave their houses in the winter, go and spend the winter in Florida and do not use much electricity. Do you think they should be the beneficiaries of that? Whereas there are people who are not very well to do, live in houses that are not very well insulated, run their ovens in the wintertime to help keep warm and use a lot of electricity. How does one handle that kind of situation? There is a wide gamut. We are a power-at-cost utility and we charge each customer for the energy he uses at the costs that fall out of the formula we use. That is the principle and mandate of our business.

Mr. Runciman: You talk about power at cost. We saw a chart earlier on that indicated we were about fifth or sixth in Canada in terms of cost, cents per kilowatt hour. It was Mr. Marriage who had that chart for us. Do all those other utilities that are lower than Ontario Hydro have the same sort of policy in place, power at cost?

Mr. Palmer: Not necessarily. Some do and some do not. I think all utilities, generally, in North America follow the principle of allocation of power at cost, but the investor-owned utilities then add a rate of return on to that number in order to give their investors something from it. But all utilities tend to allocate their costs across the customer groups in what is perceived to be a fair and equitable way.

What we mean by power at cost is that we charge the customers of the system the costs as they are incurred from operating the system. It is not a claim that it is the cheapest cost. It is a claim that all that is charged is the cost of doing business, and that cost is distributed among the customers in a fair and equitable way. Those are the related criteria.

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Mr. Runciman: Has Hydro or the corporation, at any point, given any consideration to modifying that policy? I am having a difficult time understanding the ramifications of the debt Hydro carries, the \$25-billion debt. Mr. Franklin

indicated he does not see that decreasing; in fact, he sees it increasing over the years.

Has any consideration been given to modifying, perhaps, the power-at-cost policy to eliminate or significantly reduce that debt? I am thinking of the onerous burden of servicing that debt over the years. In effect, over the long haul, it could be beneficial to all consumers in terms of the rates we are going to be paying. As I said, the cost of servicing that debt now consumes about 50 per cent of your revenues.

Mr. Palmer: Yes.

Mr. Runciman: Is that something that is ever given any consideration?

Mr. Palmer: I suppose the best way to answer that question is that the people who decide the periods over which our debt is to be collected for new plant really started with the clause in the Power Corporation Act which says it is to be collected over a period of 40 years.

You have to bear in mind that in 1906 or 1908, the organization was 100 per cent in debt. It had no debt-equity ratio at all. At least, it was 100 per cent debt and there was no credit. As time went along, although the organization has got bigger, its debt-equity ratio has not changed an awful lot in the last 25 or 30 years.

But clearly, if there were a decision made to collect the debt more quickly, that does not simply change the power-at-cost principle; it just changes a decision about how quickly the debt is to be collected. I am not sure whether that has responded to your questions.

Mr. Runciman: I guess at your level in the corporation there has been no discussion of that as a possible thrust of the corporation.

Mr. Palmer: No.

Mr. Runciman: I am thinking of the expenditures in terms of servicing that debt, billions and billions of dollars over the next 15 to 20 years.

Mr. Palmer: There is a pretty complex question here about how much you should load on present customers as distinct from customers 30 years from now, because the lifetime of a major generation station is very long. Should you lay on present customers all of the costs for that, when customers two generations away will be beneficiaries of some of the output?

Mr. Runciman: Does the crunch never arise, though? Is that what you are suggesting? That is what I always have difficulty with.

Mr. Palmer: I suppose if the system stopped going at some time, ultimately the debt would disappear.

Mr. Chairman: Mr. South, had you finished?

Mr. South: Yes.

Mr. Chairman: OK. Mr. Charlton.

Mr. Charlton: Very briefly, I take it from what you have said that the more detailed discussions next week are probably the most appropriate place for my questions. I have specific questions on load shifting, time-of-use rates, interruptible rates and direct load control. Would it be more appropriate to raise specific questions under that next week or now?

Mr. Palmer: We have some quite detailed material coming up there, Mr. Charlton.

Mr. Charlton: OK, then it is probably more appropriate if I see the detailed material.

Mr. Palmer: It probably might be more appropriate. I would be glad to try it if you wish, but I think it might be better at that time.

Mr. Charlton: Good.

Mr. McConnell: I think it would be better, Mr. Charlton, because we will be making presentations on each of those subjects.

Mr. Charlton: I just wanted to make sure.

Mr. Brown: I just have one quick question. With the rather recent move towards demand management, is there going to be a dramatic shift in staff function towards demand management in coming years? Is there going to be a major realignment within the corporation to do this?

Mr. Palmer: Yes, there will be, and indeed, it has taken place to some degree already. I can speak about my own division of responsibility. I had some 50 people not more than three years ago and now I have 200 who report to me, all of whom are doing major things in the area of demand management. I see the same kind of thing happening throughout our regional offices in the province. It is happening in the municipal utilities as well. So there has been a significant shift.

We are also hoping that we do not take on too many people internally, more than we need to provide a kind of oversight for the programs, and that we will be able to galvanize the consulting profession, the contracting profession and so on, the infrastructure out there in the province, rather than gearing up as we might for a major generating station, but using all the facilities already in the commercial marketplace.

Mr. McGuigan: I do not have a great fear of debt, as my friend here does, but it brings up a point. I am not an expert on mortgages, but I have seen those comparisons between, say, a 30-year mortgage and a 40-year mortgage. Going by

memory, the monthly payment between a 30-year mortgage and a 40-year mortgage is not significantly smaller for the 40-year, but you are paying on it for 10 years longer.

I am thinking that when that 40-year was established, we were probably at much lower interest rates. It could have been three or four per cent. I am wondering today, at high interest rates, if there would not be significant savings over the long run in putting your capital costs over a shorter period, taking into account the change in interest rates in recent years.

Mr. Palmer: I will defer to my chairman there. Do we have material later that deals with this question?

Mr. McConnell: We do, in fact, discuss this subject later.

Mr. Runciman: At what point, could I ask?

Mr. McConnell: We will be making a presentation under 1.4, which is tomorrow morning, if we recover our schedule.

Mr. Chairman: Is that satisfactory, Mr. McGuigan?

Mr. McGuigan: Yes.

Mr. Chairman: All right, perhaps I could ask you, Mr. Palmer, to go on to the second portion of the presentation then.

Mr. Palmer: All right.

Mr. Chairman: We will see if we can recover our schedule here.

Mr. Palmer: This particular option, to avoid building supply facilities of our own, deals with independent generation.

For many decades past, certain industries and municipal utilities in the province have generated their own electricity and operated their systems in parallel with Ontario Hydro. Examples in industry include Inco, Dow Chemical, and among the municipal utilities, Bracebridge and Orillia. There are about 1,000 megawatts of this generation on our system that have been there for a very long time, many decades. The long association has been beneficial for all concerned and it has helped us quite a bit in developing the recent nonutility generation programs. It is on these recent nonutility generation programs that I want to focus your attention.

Before I move to these programs, I want to make a few terms clear. I will speak of parallel generation, nonutility generation and independent generation as I go. They all mean the same thing. They are not different at all. All of these terms are in common use and in the various documents you will be examining in your

deliberations in the next month or so, we will use one or the other of them.

Very substantial progress has been achieved in the latter since I spoke to the select committee on energy two years ago. I would like to list a few of the Hydro initiatives underpinning that progress.

We now have a strong corporate policy in place to develop parallel generation. We have three informative pamphlets that potential suppliers can get from us that tell all the fundamental details they might ever want to know to start to develop parallel generation.

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In 1987, we operated a workshop for all the interested participants in the independent generation business or for those wanted to be in that business. There is a great opportunity to hear about issues, problems and opportunities, and we all spent a couple of very profitable days in that activity. We plan to do that again every year as long as it is needed. That has been helpful.

I am going to skip the next line on the list for a minute.

We have low-interest loans available to encourage cogeneration in industry, and to date, we have negotiated approximately \$50-million worth of them. We have been funding consulting studies to determine feasibility of cogeneration on industrial premises. We have done seven studies, costing up to \$300,000—that is in total—and we have a number of others ongoing.

We work with the water power association of Ontario's technical committee, and at the moment that association represents the majority of independent power suppliers to Ontario Hydro.

We have done a lot of presentations, 20 or more, to trade groups and public forums, and we have given a couple of other Canadian utilities assistance in getting their own parallel generation programs started. We have increased the target for this program from 330 to 1,000 megawatts in recent times, and we have formed a new nonutility generation division, which starts to work on August 15. It will have the responsibilities for the further development of nonutility generation.

I want to come back now to the Ministry of Energy, to make a remark or two about the good work the ministry has been doing in the parallel generation area. It too has mounted some workshops and done some other things that have been very helpful in the nonutility generation field.

In 1985, at the end of the year, we had 8 installations in Ontario, with 5.9 megawatts—not very much. In June 1988, it had moved to 22

installations at 25 megawatts. We have committed at this time 15 more, at 206 megawatts, and we have under discussion some 55 further projects totalling 915 megawatts. In that latter group, some will fall by the wayside as time goes along, but many of them, I am sure, will come to fruition. They cover small hydro, garbage burning—some people call that municipal solid waste; it is garbage—wood chips and cogeneration.

Maybe I should tell you what cogeneration is, in case you have kind of forgotten. It is those locations in industry that have potential for using both steam and electricity. When you put heat and electricity together, you get a lot more efficient operation out of the fuel you burn. Cogeneration is really a very fine thing, and we are trying to encourage a lot of that in the province.

Our forms of payment have changed somewhat too. For five megawatts or less, we have preset or fixed rates, but there are a number of options in those rates, from which the supplier can choose, depending on his installation, the one that most fits him. Above five megawatts, we negotiate the rates and conditions. The ceiling for the negotiation is Ontario Hydro's avoided cost; that is, the cost of doing something else, like building a new generation station.

You will notice 55 applications there, to 900 megawatts. You can see the volume is increasing tremendously. We are beginning to consider that, while our negotiations arrangements are working well, some kind of bid process would be fairer, more competitive and, in the long run, produce more cogeneration on the system at more economic prices. We are well into developing a bid process and we hope to be on the street very late this fall or in the winter calling for bids to supply some block of generation to us from the independent suppliers.

Let me take just a moment on a couple of small barriers we have been facing. They are not significant to the long-term development, but we are paying the suppliers now more than our avoided costs by quite a little, so that is adding a bit to the cost, and our cost of doing business, our transaction costs, are very high as we build up a volume of independent generation.

On the first point, as time goes along, our costs will draw close to the avoided costs or beyond them for the under five megawatts. We expect that through the competitive bid process and negotiations, the major suppliers will be producing for us at our avoided costs. Again, as I have said, as the volume increases, our transaction

costs per unit bought will drop to a reasonable level.

I want to leave the subject on a very upbeat note, because as you can see, I am pretty enthusiastic about it. There is bright future in Ontario for nonutility generation. We will certainly achieve a target of 1,000 megawatts.

None the less, there are a few other clouds than the one I mentioned just now and you should know about them to temper your enthusiasm about parallel generation, even if they do not temper mine, but I want to leave them, in the interests of time, to the more detailed presentation that we will have next week on the subject.

Those conclude my remarks on the parallel generation activity.

Mr. Chairman: Thank you, Mr. Palmer. Mr. Runciman, you had a few questions.

Mr. Runciman: Just a couple. Mr. Palmer, I think you said 37 sites, as of this year, are actually in operation?

Mr. Palmer: I think it is 22 at this time.

Mr. Runciman: How many of those are in what you call eastern Ontario? There are a lot of definitions of eastern Ontario, but from Hydro's perspective.

Mr. Palmer: I think we have two or three in eastern Ontario. They are fairly well distributed through the province, although there appear to be a few more in northern Ontario at this time.

Mr. Runciman: I would be interested personally in knowing where those eastern Ontario sites are.

Mr. Palmer: We provided a nice chart to the Ontario Energy Board last year and this year about where all the installations are, and I think we probably could make it available to the select committee.

Mr. Runciman: It would be helpful. I do not know if other members would be interested in it, but they may well be.

The only other question I had is about going to the bid formula. You think that is going to perhaps attract more people to get into the cogeneration game and save you some money this winter. How do you arrive at that conclusion?

It seems to me it might have the opposite effect. If you come up with a fair price which industry could accept and live with, that in itself might be more of an incentive than simply—I can see where there are some advantages, on the surface, anyway, of going to bids, but I am just wondering if indeed it is going to perhaps

frustrate desires to see more cogeneration in place.

Mr. Palmer: I am confident that there is a volume of people out there who want to be in this business who are very ingenious, they are very entrepreneurial and they are willing to come forward with propositions that will be very attractive.

I am not sure whether you have been following this project here in Toronto about heating and cooling the railway lands. The city called for bids and got four very interesting proposals, of which they have now tentatively chosen one, and the complexity of that proposal is quite astonishing. It includes heating, cooling, supply of electricity on to the Ontario Hydro system that may in time reach 300 megawatts if they go ahead with it, just an enormously ingenious proposal. It is that kind of thing I expect will develop in great numbers as time goes along.

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Mr. Runciman: You said you have a lot of interest in cogeneration now. If you are going to a bid process, there are areas of the province which might suffer in that kind of a system. Perhaps the industries located in southwestern Ontario may be able to be much more cost-effective in submitting a bid, and if you are only aiming at about a 1,000-megawatt ceiling, you may find that the bulk of your cogenerators are going to come from that particular part of the province, to the detriment of producers perhaps in other areas of the province who may like to get in on the game.

Mr. Palmer: Sure. I take your point. I was very careful to say that our target was 1,000, but that was not our limit. We have really set no upper limit, but we will think ourselves to have done a fair job if we can attract 1,000 megawatts for the year 2000. The way it is going now, I suggest that number will be surpassed.

Mr. Runciman: As long as it does not overlook regional considerations. That is my point: that we are not going to see all the cogeneration centred in southwestern Ontario, for example, which now is benefiting from significant economic growth while other sectors of the province are not.

I know of an industry in my riding, for example, that is very much interested in cogeneration and would certainly find it something that might enable them to keep their heads above water and keep operating and keep close to 200 people employed in eastern Ontario. Those are factors I think Hydro also has to take a look at.

Mr. Chairman: Mr. Charlton?

Mr. Charlton: My question deals with cogeneration and with buy-back rates. I am just curious about how you approach the question of cogeneration, especially in the industrial sector. It seems to me, for example, that cogeneration in the industrial sector can provide in some cases not only a very basic reliable source of electricity, but in other cases in the industrial sector, there are industries that are particularly appropriate, for example, to provide peak load. In fact, the nature of industrial operations is in some cases what causes the peaks, and industrial cogeneration, therefore, if well planned, can play a major role in meeting peak load.

In your thinking at Hydro, when you are considering buy-back rates, do you look at the question of what it is you might use that power for in determining the buy-back rate you are prepared to pay?

We have been told by Hydro, on God knows how many occasions, that for the most part peaking power is expensive power. If that is the case and you have an ability to negotiate a specific package with an industry or a category of industries around meeting peaking needs, you may want to consider a quite different rate structure for buy-back rates in that kind of circumstance than you would negotiating base load or anything else.

Mr. Palmer: That is the very reason we moved away from fixed rates for loads above five megawatts, in order to give us that kind of flexibility in the negotiation, so that we could size up each proposition that came along for what its real value to our system was and then work out a price with that supplier that was appropriate to its value.

Mr. Charlton: I understand there are negotiations that go on, but for example, somewhere—I just passed it a moment ago—I am going by memory now; I am going back to the last set of hearings we had here two years ago when we went through fairly lengthy discussions with—I cannot even remember the specific officials we discussed buy-back rates with because there were a number of them most likely.

Mr. Palmer: One was me.

Mr. Charlton: You and others. I remember even putting some questions to the chairman, Mr. Campbell, at the time. You have a section here that says, "Above five mw—negotiated rates and conditions—ceiling is avoided costs." I am thinking back to what we discussed two years ago, what Ontario Hydro viewed as avoided

costs. Certainly, avoided costs were not your most expensive piece of power. You talked about avoided costs two years ago as being what you saw as the Darlington costs. Do you recall?

Mr. Palmer: I think that is right, Mr. Charlton, but I think at the time we were talking about we had standard, fixed rates. It was like the Model T, you could have any colour you wanted as long as it was black. We have really moved away significantly from that position over two years and are now talking with individual potential suppliers based on what the avoided costs would be for the site where that supplier wants to put on a development and how he plans to shape it.

Mr. Charlton: You are now telling me that in fact you would be prepared to negotiate with a cogenerator or a parallel generator who could provide well-situated, well-located peaking power, you would be prepared to negotiate up to your full avoided costs of peaking power?

Mr. Palmer: Yes.

Mr. McConnell: There was a question asked earlier, having to do with independent generation, that we deferred until Mr. Palmer made the presentation. I believe it was asked by Mrs. Grier, and we put off Mrs. Grier until we arrived here. We have now arrived and I would like to indicate that the answer to her question was presented by Mr. Palmer in figure 8B-3. That gives the insight into the feel of how we could put down 1,000 megawatts in our projection.

Mr. Chairman: Thank you, Mr. McConnell. Perhaps Mrs. Grier might follow up at a later time. She is not here right now. Mr. Penn, if you could come forward, I will ask you to put on the neck microphone so that Hansard can record your presentation.

Mr. Penn: Mr. Chairman, members of the select committee, as you can see from the slide, my topic this afternoon is what options are available to consider new generation supply. My name, by the way, is Bill Penn. I am the program manager in the design and development division. My group's responsibilities, among others, are to do the preliminary assessment and engineering of all possible generation supply options and perform the environmental assessment of those possible options if the corporation and the government have interest in them.

You have just heard from Mr. Palmer, and you have heard from many others, the extent to which our corporation supports demand management and independent generation or nonutility generation. You also heard earlier today the importance

of looking at new sources of supply since in the interim planning we are looking at the possibility of new hydraulic plant and following the turn of the century there will be a need, both perhaps from a growth point of view and old-plant replacement, to also look at new supply sources.

There is, in our view and throughout our studies, no single best option for generation supply. Like the demand options, the supply options have different characteristics and different roles. In fact, the options available to us in generation in the province parallel those that we already have. They are diverse. They serve different roles. They serve different customers. So we should, in the future, be able to maintain the reliability of our system, and we should be able to maintain our low electricity costs.

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In my presentation, I will outline the range of supply options, their characteristics and what role they may provide. But I will do so in a broad sense today. Next week, I shall return to discuss detail associated with the strategy elements in supply that we are proposing. These have to do with wind and solar, as far as alternative technology is concerned; the development of our hydraulic resources that remain; clean coal technology, which we feel has high promise, and nuclear generation.

Let me start with a broad review of the alternative technologies which are listed here. They are generally renewable. I will deal with solar and wind, which we believe have application to remote communities in Ontario, in a little more detail.

Municipal solid waste is associated with a cogeneration form of electricity, as we have just heard. Hydro has been involved in studies both in Toronto and in Ottawa on this type of proposal. It usually requires that the municipality requiring to get rid of its waste has high quantities and is willing to pay high tipping fees before the project can be considered to proceed.

There is of course another problem with it, the unpredictability of the nature of the waste, which can result in serious concerns regarding certain emissions and other toxic and noxious substances. This has previously been dealt with in a preliminary form under cogeneration.

Wood and peat have also been considered under cogeneration. They are not suitable, in our view, for the bulk electric system. It would require very large quantities, but it is having some role in cogeneration.

Turning to some remarks on solar and wind generation, of course, they are renewable.

Theoretically, the resources are unlimited. There is fairly strong public support, it being seen that the energy sources are renewable, safe and nonpolluting. However, the systems—and we have investigated systems in both varieties—are expensive. Their capital costs are high, albeit in the last few years costs have reduced significantly. Nevertheless, costs are far too high for the bulk electric system supply.

Another concern with alternative energy is what is known as the nondispatchable generation characteristic. That is, when you call for a supply of electricity, you can only depend on it with regard to the nature of the weather. Clearly, solar energy is not available to us at night, and neither is wind power when the wind is not blowing.

With regard to environmental impacts, for a bulk electric system, they could be significant in the extensiveness of the land requirements needed. However, for local, remote situations, this type of impact is not of such concern.

In conclusion, the potential role, and we believe that it is certainly promising, is for the supply of electricity to remote northern Ontario communities not fortunate enough to be on the bulk electric system today and where the systems would be backed up by diesel energy or battery storage.

Mr. Chairman, you asked Ontario Hydro to comment on fusion. We have studied fusion as we have all the other supply options. We are project managing a fusion study on behalf of the federal and provincial governments. We are involved in international programs, both in the United States and Britain.

It is a system of promise. It is highly technological in content. As yet no one in the world has managed to demonstrate technical feasibility to actually generate more power than is used in the process itself. We think it will come. We do not think it will possibly be commercial in Ontario before the year 2010 and perhaps not until the year 2050.

I turn now to hydroelectricity, a source of energy which has served this province extremely well. It is of course renewable and of course indigenous to our province. It attracts strong public support. One of the reasons is that the public perceives that there are still very large quantities of undeveloped hydraulic resource. I think this is partly due to the large quantities still available in Quebec and Manitoba.

We in Ontario have developed the large base load hydraulic resource, which is cheap to do. There still, however, remains a significant amount of energy. We are pursuing those studies

which were referred to yesterday when we spoke of the Little Jackfish project in northwest Ontario, the Mattagami project in northern Ontario and the Niagara Falls development in southern Ontario.

With regard to environmental impact, it varies according to its location. The impact is mainly associated with flooding. Flooding can cause difficulties with fauna and with flora. It can also, in certain locations, leach mercury together with certain vegetations and soils to be released to the environment, which can be a significant problem.

There are, of course, no emissions from hydraulic power. There is no SO_2 ; there is no CO_2 , and there is no radiation. However, there is an impact on recreational activities. It does require communities to move often. There is this concern, as I have mentioned, on mercury.

I have mentioned and I shall next week talk in detail about how much hydraulic power is available and where it is in the province. I shall particularly refer to the water resources parks and the Albany River territory, which is subject to native rights and is in low-lying land. Those are some of the reasons, together with the fact that we have already developed 58 stations, why there is a restricted amount left.

Moreover, the resources still available do not have sufficient water flow to act as base load stations. They are not a major energy source. They are a peaking capacity.

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With the additional hydroelectric capacity we could install in the next 20 years, that is to the year 2008, we would be able to generate about 6,000 gigawatt hours per year. The growth in electrical consumption by 2008, if we assume the median growth rate, is about 71,000 gigawatt hours. The new hydroelectric potential we are talking about could contribute to about 8.5 per cent of the predicted growth in consumption.

I want to move now to fossil and to cover oil-generated, gas and coal in that order. The characteristics of fossil are such that it is an expensive way of generating electricity. The plant itself has low capital cost. It can be built relatively quickly but has extremely high operating costs. The supply of oil is uncertain from the mid-1990s onwards and its price is uncertain. It is undoubtedly going to rise.

There are relatively low acid gas emissions from oil generation. As Mr. McConnell mentioned the day before yesterday, there is SO_2 emission, as the sulphur content of oils used in generation is about 0.3 per cent to 0.4 per cent.

There will be, as with all fossil stations, even clean coal technology, CO² emissions, which cause the so-called greenhouse effect. The potential role of oil as a new supply, in our view, is very limited. It is limited by very high growth rates in electricity demand and the need to act extremely quickly.

With regard to gas, it is also an expensive way of generating electricity. It has low capital costs, lower than coal-fired stations, but it has high operating costs, somewhat lower than oil. Supply is also uncertain from the mid-1990s. There are relatively low acid gas emissions with it, but again there are emissions of carbon dioxide. It is a short lead-time option. Its potential role in the future, as is oil, is for peaking, and because of its shorter lead time, it could provide flexibility in very high growth of demand.

Because of the characteristics of oil and gas I have briefly presented, they are not part of the strategy elements we are proposing in chapter 12.

For coal-fired stations, the characteristics are that it is an economic form of generation at low capacity factors, typically 30 per cent capacity and lower. It has a moderate capital cost but it has very high operating costs, as we heard earlier. It is plentiful but it is not indigenous to Ontario. The sources of coal we use either come from Pennsylvania, Ohio, or from Alberta and Saskatchewan.

There is, of course, concern about acid gas emissions. As you have heard, we have recently submitted an environmental assessment on various forms of flue-gas desulphurization scrubbers to reduce emissions to the atmosphere and meet the Ontario regulations. There is carbon dioxide released and it is released not as a function of the capacity of the plant but as a function of the amount of energy generated from the plant.

The characteristics of fossil coal are that it has low public support because of concerns of emissions to our atmosphere. There is, however, a promising role for clean coal technology, particularly integrated gasification and confined cycle, with perhaps less promise at this time for fluidized bed combustion. I will be dealing with those two opportunities at length next week. The potential role for fossil-coal-fired, whether it be conventional or clean coal technology, is again for peaking and for intermediate loads.

We now turn to the last major technology, nuclear and Candu nuclear. It is most economic for base load generation. It is capable of load following and therefore can meet intermediate generation needs. The record shows that the

Candu nuclear plants we have in Ontario produce the lowest-cost nuclear electricity in the world. They have low environmental impact in operation.

They have in operation an excellent safety record. There has not been a single worker or a single member of the public killed or injured due to the operation of our nuclear plants. They have brought jobs and prosperity to our province. The degree of content in the Candu nuclear of work done in Ontario is very close to the amount for hydroelectric stations, which is 97 per cent. That for Candu is 93 per cent. It uses indigenous uranium mined in Elliot Lake or from Saskatchewan.

With regard to public support, it is higher than coal-fired technology of the conventional variety, but there are genuine public concerns in areas of nuclear safety and irradiated fuel disposal. Recently a comprehensive review by Professor Hare has been released by the Minister of Energy (Mr. Wong) confirming the safety of the technology. The potential role for future nuclear plant consideration is to meet increased base load and intermediate load.

Maybe I should summarize quickly. New supplies of electrical generation will be needed in the future for expected electricity growth and, even if no growth, for the replacement of all the facilities. We have to consider lead-time considerations to put these facilities in place, and we would expect that they all be subject to the Environmental Assessment Act examination.

With regard to solar and wind applications, we see them as eminently suitable for remote communities, provided there is diesel fuel backup or storage to assure supply throughout the day. Hydraulic developments are still available. They are of limited resource. We are studying Little Jackfish, Mattagami and the Niagara development. There are also other resources available in the north, in Moose River basin.

With regard to coal, gas and oil, they meet peaking or intermediate loads. There are environmental concerns and they have higher operating costs, but clean coal technology holds promise.

With regard to nuclear Candu, it is the lowest base-load-cost generation. It is one reason our electricity rates are low, and perhaps in a sense it is becoming the backbone of our future supply. There are problems with it with regard to pressure tubes, which we believe we are overcoming. There are genuine concerns in the public about nuclear safety and irradiated fuel disposal. The safety record to date has been excellent.

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Mr. Chairman: Thank you, Mr. Penn. Are there any questions at this time from members of the committee? Seeing none, perhaps I will ask Mr. Marriage to present his portion.

Mr. Marriage: I would like quickly to finish off the discussion on the options, and I will be dealing with purchases.

First of all, I would like to make the point that seeking opportunities to purchase electricity is an ongoing activity, looking at both the short term and the long term. Purchases can provide both short-term economy purchases, as we discussed earlier, and long-term capacity and energy option for meeting intermediate or base load supply.

The benefits for the short term are basically lower operating costs where hydraulic can displace fossil energy on our system. In the long term we would be trying to negotiate a purchase that would be competitive against all alternative supply options, and these purchases could also provide some diversity to our system.

The emphasis in the strategy document is on the longer term, in terms of a supply option to meet the future growth, rather than the short-term economy. We also have not discussed in the strategy document purchases from the US, since we consider the availability, the cost and the environmental advantages of hydraulic energy from Manitoba and Quebec superior to what is available from the US.

Just a few things in terms of the potential. As we have already indicated, unlike Ontario, both Manitoba and Quebec have sizeable hydraulic potential because of more favourable conditions in those provinces, and we are looking at purchases of from a few hundred megawatts up to 4,000 or 5,000 megawatts and durations up to 35 years, very close to the assumed life of our fossil and nuclear plants.

It is important to indicate that purchases will not be a short-term option in the long term, because neither Manitoba nor Quebec are forecasting to have surplus capacity in the 1990s. They would be having to build new generation to supply us, and that will likely take 10 years, as I indicated before, similar to our building new hydraulic.

The amount, duration and price will all have to be negotiated. I will discuss those factors later.

Our last round of negotiations with Manitoba and Quebec started in 1985, and as the president indicated on Tuesday, we are not in a position to discuss the details of the current negotiation—to do so would jeopardize very sensitive discussions—but I will try to provide some

information on quantities being considered, some of the bases for negotiation prices and the impacts of purchases.

Looking at Manitoba, we have been looking at purchases ranging from 200 megawatts up to 1,000 megawatts for periods up to 35 years. New transmission would be required in Ontario for anything above 200 megawatts, and as we indicated earlier, we did sign an agreement with Manitoba in October to purchase 200 megawatts between 1998 and 2003 which did not require any transmission.

In response to Jerry Richmond's questions, why we did that, of course, was related to our concern about meeting our customers' needs around the year 2000 and also meeting the acid gas restrictions around the year 2000. We felt, although this is small, that hydraulic energy from Manitoba would help to meet these requirements.

In terms of the pricing, which will get a cents-per-kilowatt-hour price, we looked at it compared to our own hydraulic alternatives. We looked at it in terms of nonutility generation and building a coal-fired plant. It was competitive with our own hydraulic and nonutility, less than building a coal-fired plant. We can get you those figures.

If we were to purchase 1,000 megawatts from Manitoba, this would require new generating stations in northern Manitoba and transmission from the north down to Winnipeg and across through Thunder Bay to Sudbury, for a total of some 2,100 kilometres, half of that being in Ontario.

Looking at Quebec, we have been considering purchases ranging from 750 megawatts up to 4,000, again for periods up to 30 years. We have been concentrating recently on 2,000 megawatts for 25 years. Again, new generation would have to be built in Quebec, with transmission in both Quebec and Ontario for purchases over 750 megawatts.

If we did make a purchase of 2,000 megawatts from the James Bay area, that would require about 1,100 kilometres of transmission in Quebec. If it were delivered into the Ottawa area, it would require some minimal transmission to make the connections between Quebec and Ontario and to connect into our 500-kilovolt system in the Ottawa area. Of course, if we made connections elsewhere into the province, there could be more transmission.

In terms of the cost of purchases, it will be a subject of negotiation and it will depend on the supplier's cost of his generation and transmission

facilities; his alternatives in terms of other markets he can sell it into; and, of course, Ontario Hydro's other alternatives.

Of course, our objective is to get the lowest cost in terms of a supply option that is competitive to other options we have. For base load, high-capacity-factor energy that you have just heard, we still feel that the Candu nuclear plant is the lowest-cost option. The supplier will be looking at getting a fair price to cover off his facilities and some contingency margin and profit, or what he can get on the market elsewhere.

The bottom line is that there are not going to be any cheap purchases. Construction of hydraulic plants is expensive and the opportunities to sell into the United States in terms of their oil-fired generation and building small fossil plants means that the US will likely be able to pay more than we would in terms of its high-cost options.

I would just like to highlight some of the different characteristics, advantages and disadvantages of the purchase compared to other supply options. The resource, of course, is renewable. It is indigenous to Canada, although it is not indigenous to Ontario, looking at purchases from Manitoba and Quebec and looking at hydraulic purchases. But this does provide a higher level of supply and price security than from fossil fuels. Also, the environmental impacts in Ontario are going to be limited to transmission. We avoid the construction of the generation. Also, there could be lower emissions and wastes compared to some of our other supply alternatives.

On the other side of the coin, of course, the construction and operation of hydraulic plants in the other provinces are going to stimulate their economies, as opposed to our building a supply option, in terms of jobs, manufacturing and various matériel for construction and operation.

1700

I will just try to summarize. I basically covered most of these points. Really, the last two points I would like to make are that carrying on negotiations as we have over the many years with our neighbouring utilities is a way to keep a supply option open and provide some flexibility. We are taking these negotiations very seriously and are still vigorously pursuing them, involving our senior management, including the president. That is it.

Mr. Chairman: Thank you very much. Mr. South, you had some questions.

Mr. South: Yes. What kind of a cost are you looking at per mile of transmission? I realize

there is quite a variable there, but I would like some kind of a ball-park figure. Is it a couple of hundred thousand dollars? Is it \$1 million, \$10 million?

Mr. Marriage: I think it would be—and maybe one of my colleagues can help me—close to half a million dollars a mile.

Mr. McConnell: If it was these long transmission lines such as the one from Manitoba, we would be measuring it in the hundreds of millions of dollars.

Mr. South: And the cost per mile?

Mr. McConnach: It could be as much as \$1 million a mile.

Mr. McConnell: One million dollars a mile would be typical.

Mr. Charlton: I have just a curiosity question.

Mr. Marriage: Is it all right if I sit down?

Mr. Charlton: Go ahead. You can sit down if you want, sure. You can answer as well from there.

You have obviously had discussions with both Manitoba and Quebec over the past number of years around the purchase option. Have you explored at all in those discussions the possibility of a joint venture in those provinces where hydraulic resources exist?

Mr. Marriage: Yes, that has been discussed with both provinces, but I think, as you might appreciate from looking at it from Ontario's point of view, a hydraulic plant lasts 80 to 100 years. The water is there and it will always be there. I am not sure, if we were on the other side, whether we would want to be giving that up to somebody else. It has been discussed with those provinces, but at this point neither one has shown a great interest in it.

Mr. Chairman: Are there any further questions?

Mr. McGuigan: Referring to the question of the effects on the Ontario economy, I guess I would have to point to Canada. We have relied in past history on a number of megaprojects to stimulate our economy, primary examples of which are building the railroad to the west, building the seaway and then building the Ontario Hydro system.

When you think of megaprojects at the moment, when our economy is so heated—you cannot build houses fast enough and so on—the question that comes to mind is, where would we get the people to enter into a megaproject? Is there any potential in staging the building of

these projects at low periods in the economy such as, say, 1982? You put on a big force in 1982 and you slack off in other times. What potential is there in these projects to sort of manage the economy, at least the building economy?

Mr. McConnell: There may very well be merit in that idea but, if you recall, as Mr. Rothman commented this morning, for major projects—and in this particular case we are talking about major projects in Manitoba and Quebec—it is very difficult to forecast, when you start talking eight to 10 years from now, when you are going to have your depressions and when you are going to have your booms. If you recall the difficulties we face in getting approvals and going through that process, it would be very difficult to plan these large projects on the basis of busts and booms.

Mr. McGuigan: Once you started there would not be much time left.

Mr. McConnell: The situation could have totally changed by the time you got your approval. It certainly is an idea with merit but it would be very difficult to manage.

Mr. Marriage: Just to add to that, we do have a strategy statement later which we will be discussing in terms of smoothing of resources, where we look at the possibility in terms of our own construction of trying to smooth out the impacts on the supply industry and on jobs.

Mr. McConnell: That concept is a little different than the busts and booms; it is more to provide a steady workload in terms of the program and, as Mr. Marriage has indicated, we will be talking about that. You have touched on it in terms of your comment, which certainly has merit.

Mr. McGuigan: Being your own contractor, you probably have a better chance of doing that than others.

Mr. McConnell: That may be an impression the public has, but Ontario Hydro, in so far as electric projects are concerned, contracts out everything to private enterprise. We also contract out our fossil-fired stations to private enterprise. Of course, in the case of the nuclear projects, we do manage the engineering and the project management, but the majority of the activation in our society has to do with manufacturing, which is also done by private enterprise. The majority of the capital effort and jobs are not in Ontario Hydro; they are throughout Ontario.

Mr. McGuigan: You do raise another point, though it is not germane to what I was asking. We do not have any multibillion-dollar plants which

were closed before the completion dates, as do our neighbours to the south. I always understood the reason for that was the control that Ontario Hydro exercised over the construction, that when the blueprints call for so much steel and cement to be in a certain place, you could go back five years later and drill in and find that was the case.

Mr. McConnell: That is correct.

Mr. McGuigan: Am I right in saying it is because of the control you have that you do not farm it out completely to other people?

Mr. McConnell: No. If we contract out to other organizations, we do not abrogate our responsibility as the customer for making sure we get what we bargained for. That is correct.

Mr. McGuigan: That is why you do not have any plants sitting out there worth \$8 billion or \$10 billion which have been abandoned.

Mr. McConnell: That is right.

Mr. Penn: I would like to comment on Mr. McGuigan's suggestion. I think for it to work you would have to have banking of environmental assessments. Even if we were building in times of economic depression, we would have to have that.

Second, from our studies, although it is possible in a multi-unit station—and we build multi-unit stations for savings on scale of size—you can design to build one or two units and then a period of time before you complete the station with another one or two units, but it turns out to be more expensive because you just cannot design to allow the extra construction costs to be reduced when, in fact, if you want to minimize the cost of a plant, you really want to build it as fast as you can to reduce the interest on the capital construction.

Mr. McConnell: Our strategy does not explicitly propose banking environmental assessments; we can certainly see difficulties in that process. But if you, Mr. McGuigan, or other members of the select committee felt that concept had merit, that would be the kind of idea Ontario Hydro would welcome. We would certainly want to very seriously consider such a proposal.

Mr. Chairman: Mr. McConnell, in view of the hour, with due apologies to Mr. Falconer and Mr. Snelson, I wonder if we might defer discussing chapters 9 and 10 until tomorrow morning.

Mr. McConnell: That would be acceptable to us. We will come prepared tomorrow morning to have Mr. Falconer and Mr. Snelson. I hope they are available.

Mr. Chairman: I guess we did not catch up to our agenda again but perhaps we can over—

Mr. McConnell: When you look at the paper, we did not too badly. We are just about on track.

Mr. Chairman: Very good. Then I will adjourn the committee until 10 o'clock tomorrow

morning in this room. I remind the members that there will be a brief in camera session for the committee at 9:45 a.m. in room 230.

The committee adjourned at 5:12 p.m.

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Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy

Electricity Demand and Supply

First Session, 34th Parliament

Friday, August 5, 1988



Speaker: Honourable Hugh A. Edighoffer
Clerk of the House: Claude L. DesRosiers

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Contents of the proceedings reported in this issue of Hansard appears at the back, together with a list of the members of the committee and other members and witnesses taking part.

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Friday, August 5, 1988

The committee met at 10:07 a.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY (continued)

Mr. Chairman: I wonder if I might call the session to order this morning. Today, we are going to continue where we left off yesterday, with chapters 9 and 10 of the briefing book, at the beginning.

Right now, though, the clerk is handing out a brief statement Ontario Hydro has prepared about the fact that, I gather, the province is pretty well at its peak, if not over its peak, in energy demand today. This is a brief explanation. We just did our bit and turned off our air conditioner.

Mr. McGuigan: I have a comment. Hydro must have influence in very high places, the weather being number one. Also, last night, I think it was on the CBC, there was a TV comment on Sweden doing away with about a dozen nuclear plants. The comment was that it means a reduction in their standard of living of 50 per cent. Of course, many Swedes are willing to do that, but there are apparently some Swedes who are not willing to do that. I think Hydro's influence is very far-reaching when it can command all these things to happen in one day.

Mr. M. C. Ray: Could we be supplied with a copy of the federal energy study that was released yesterday and some analysis of it, perhaps by our consultants, as to its relevance to our proceedings here?

Mr. Chairman: I think we can ask the clerk to see if we can get some copies from the federal government. We will look into that and do that.

Did the committee have any questions, or, Mr. McConnell, would you like to make any explanation, just for the benefit of the members, about the power situation in the province today?

Mr. McConnell: The power situation in the province today appears favourable at the moment in the light of the response we got to the public appeal and also in the light of the fact that the temperature today is slightly reduced relative to yesterday. It turns out that forced outages we are having at the present time put us into a much better power situation than we would normally experience.

In other words, the equipment is working very favourably and we do not have very much forced outage; otherwise our situation would have been more severe. We did have one plant, at Lennox, that was forced out, but that statistically is less than we would normally expect in our system.

Of course, the situation could change, because when you get down to the bottom, as we are now, it takes only another single problem on one of the large units to put us into a more difficult situation.

Mr. Chairman: Do I take it what you are saying when you say "forced outage" is that there was some problem with one of the generating plants?

Mr. McConnell: One unit, yes. You normally have forced outages every day on something when you have 80 stations and over 200 generating units.

Mr. McGuigan: When you are right on the balance between demand and supply, as you are today, what cushion do you have in reducing voltage? How much would that reduce your load before you have to move to brownouts?

Mr. McConnell: We have a cushion associated with voltage reduction and we have a cushion that is associated with cutting our interruptible contracts. That would be approximately 1,000 megawatts between the two.

Mr. Snelson: The interruptible contracts are usually about 500 megawatts, but yesterday they said they got only 250.

Mr. McConnell: So it would be in the range of 500 to 1,000.

Mr. McGuigan: Translated roughly, 1,000 would be about five per cent?

Mr. McConnell: Yes, I think in the range of two to five per cent would be the kind of thing we could effect, depending on the situation.

Mr. McGuigan: I hope you do not reach that.

Mr. McConnell: Yes. We cut the interruptibles yesterday; we had to. Hopefully, today, with the temperature abating a little bit, that will not be necessary again, because we did have a response to our public appeal.

Mr. Chairman: Perhaps then we could turn to our agenda for today. Mr. McConnell, could you introduce any new members of your panel for the

benefit of Hansard. Then we can proceed with the presentations.

ONTARIO HYDRO

Mr. McConnell: This morning, our first presentation is on the public and government consultation. I have here on my immediate right Don Falconer, who heads up the community studies and public hearings, and on my far right John O'Connor, who is the director of public relations and was in charge at the time these studies were done. I now call on Mr. Falconer to make presentation 9, on public and government consultation.

Mr. Chairman: Come forward, Mr. Falconer, please. Should we dim the lights?

Mr. McConnell: Yes, I think that would help.

Mr. Chairman: To further help Hydro's energy demand, I guess we will.

Mr. McConnell: It might help our power situation.

Mr. Falconer: I am here this morning to answer question 9, which is, how did we get public consultation? My presentation will have three sections. I will cover the objectives of our programs, then the programs themselves or the process or methods of what we did and who we had as participants. Last, I will cover the results of the programs or what we heard and what we learned.

With regard to objectives, the overall intent or goal of our programs was to inform and consult with those affected and then, most important, to reflect their views, their concerns and their values in our corporate planning.

More specifically, this translated into this: We wanted to inform our publics that the time to plan for meeting future energy needs is now, and there is a wide range of options to meet these needs. We wanted to obtain a cross-section of views and listen to as many different publics as possible and get their concerns and expectations. Last, we wanted to present these views to senior executives and the board of directors. This measure was very important to ensure the integrity of the process.

Participants: Who did we reach? We attempted to reach a wide cross-section of people. This included the general public, provincial organizations such as the Conservation Council of Ontario, the Association of Municipalities of Ontario, the Canadian Council of Churches and quite a few others. We met with community leaders across the province. We reached residential, industrial and commercial customers. We

talked to municipal utilities and elected and appointed officials.

Program areas: What did we do? We had three major thrusts or program areas. The first was communication programs. This included speeches, presentations, documents, videos. Second, we had customer surveys. These were personal interviews with 1,200 residential, 200 industrial and 200 commercial customers. Third, we had consultation programs. These were with 58 provincial organizations, about 300 community leaders across the province and 116 municipal utilities, and we had regular briefings with elected representatives and appointed officials, plus submissions and appearances before the select committee on energy in 1986.

The key ingredients of this process—and I think this is very important—were the following. These were to ensure the integrity of the process and its effectiveness. We had senior executives present at all our meetings so that they could hear at first hand what was being said and how people felt. We attempted to listen to the values, the priorities and the expectations of people and to the things that they would have us take into account. Also, we wanted to be sure to document this input, and we did this with meeting minutes, meeting notes, briefs and questionnaires. Also of importance, we wanted to be sure to present this input to the executive office, our board of directors and planners in the organization. Last, we wanted to be sure this was incorporated in the planning strategy itself.

Now, for the results of the programs and what we learned, participants identified a number of important priorities. The three highest priorities were very clearly, first, reliability of supply—residential and industrial customers thought this was extremely important; second, reasonable rates—people made the linkage to quality of life and lifestyle with this, and to the competitiveness of industry; third, there was no question that every group felt that environmental protection was absolutely essential.

People identified other priorities as well. They wanted Hydro to encourage the wise and efficient use of electricity, and people wanted Hydro to be able to adapt to change and uncertainty, much as people themselves have done in their own lives and businesses. In other words, they want Hydro to be flexible and to use a diversity of resources and fuel types.

At all times, people want Hydro to safeguard health and safety. People would like us to reduce, or at least not increase, the debt. Participants felt

that Hydro should create jobs and economic benefits within Ontario.

Last, Hydro should minimize any lifestyle changes in its operations, because, quite simply, people like the good life. However, they also support demand management and incentives. The point here is that this is based really on no change to lifestyles, deprivation or doing without. People are not in favour of subsidizing others in this process, and they want to be sure that anything we do is voluntary in nature.

1020

In listening to people, we also heard directions that they would have us take into account in our planning strategy. They want us to pursue demand management hydraulic generation and small, flexible supply first, and that is before we get into committing to any major large-scale supply.

They would like us to emphasize indigenous resources. That is both from the point of view of security of supply and keeping economic benefits in Ontario.

They want us to make sure that our demand management initiatives are voluntary, and a related point is that they want us to observe fairness, and that addresses both the costs and the benefits of things that we do.

They want us, I think, to be close to the customer, and that has been said as, "provide consultation" in things that we do. The public clearly desires and expects to be informed and to have the opportunity to participate in our planning.

Now I would like to summarize.

We developed a variety of programs, and this was to reach and to listen to people. We used communication programs, customer surveys and consultation programs. In doing this, we had wide participation. We reached 1,600 customers in our surveys, who really represent the other ratepayers in the province, and we talked with 700 participants in our consultation program. Many of them represent thousands more through their organizations, and we reached many others in our communication programs.

The bottom line is that this was important to the strategy, and I believe that what Hydro listened to and heard was important. I think it is important as a responsible public process. I also think it is important as a way of helping our executives and our planners hear people and their priorities; and I think it was important input to the development of the planning strategy. I think we have accomplished what we set out to do, which

was to have a genuine process of public consultation and communication.

Mr. Chairman: Thank you, Mr. Falconer. Are there any questions?

Mrs. Marland: I am wondering if, on figure 9.3, where you list the provincial organizations and community leaders, there is somewhere in here that tells me who the community leaders and the provincial organizations were. I have just received a copy of this binder. Are they identified in your report?

Mr. Falconer: Not in that binder, but I can certainly provide reports that do. We have a number of volumes I can make available that list all the participants.

Mrs. Marland: I would be interested in the provincial organizations and the community leaders only. I would appreciate that.

Mr. Falconer: Certainly.

Mrs. Marland: When you get to figure 9.5 and you list the three of the highest priority—and this was, I suppose, the prioritizing that came back from your customer survey and your community involvement—are those three listed equally or are those three also prioritized within the highest priority?

Mr. Falconer: I think it is fair to say they are not really listed in priority within this group. I think the thing that stands out is that these three are clearly the highest when you look at the results from all our programs, but I do not think we can establish a one, two, three that clearly.

Mrs. Marland: You have not been able to do so from the survey you have done.

Mr. Falconer: The customer survey identified reliable supplies as clearly the most important.

Mrs. Marland: Which I would realize.

Mr. Falconer: I think the results from the other consultation programs are a little less clear. I was simply thinking that, keeping bounds of certainty on this, the fairest thing to do is to list all three as a category of extremely high priority.

Mr. O'Connor: I think I might add to what Don said that in other work we have done, not specifically for this program, we have found that the reliability of supply and the reasonableness of rates have been one and two. They tend to flip-flop back and forth. Environmental protection has been, not a distant three but a third one and has never achieved one or two in terms of the statistical reports we have done. But they are all well above all of the others in what we found.

Mrs. Marland: As the Environment critic, obviously I am very concerned about environmental protection. I would readily concede from the surveys I have been doing on a formal and an informal basis just in Mississauga South—naturally, because I have Lakeview Generating Station there—that reliable supply in the 20th century has to be the basis; that is very elementary, number one. But I think the public in Ontario today is reaching the point where it is willing to pay for environmental protection. I am hoping that eventually we will be sophisticated to the degree that the reasonable rate will be what is reasonable while we are protecting the environment.

I was hoping that those three perhaps were not prioritized and that environmental protection might have come after reliable supply, but you do not have it so specifically from your survey?

Mr. Falconer: No, but we did find right across the board that people are willing to pay more to achieve environmental protection.

Mrs. Marland: You are encouraged by hearing that also. Opposite figure 9.7 on page 13, just glancing very quickly at your summary, you have said, "Hydro asked 1,600 customers, representing about three million ratepayers across the province" What do you mean by that statement? How did 1,600 customers represent three million ratepayers? Are you saying that you have three million users of Hydro and you surveyed 1,600? Is that what that statement says?

Mr. Falconer: With statistical sampling procedures, something like the Gallup poll, you can say by using a relatively small number like 1,600 that you are representing a much larger population.

Mrs. Marland: OK. So the three million ratepayers are three million users of Hydro? Is that what that is?

Mr. Falconer: Yes.

Mrs. Marland: I guess it is the word "representing."

Mr. O'Connor: I think the three million are customers because consumers would be the total province. I think three million represents a number of people who pay a bill.

Mrs. Marland: A better word than "ratepayer" would be "customer" in this situation.

Mr. O'Connor: True. "Bill-paying customer."

Mrs. Marland: That is right. So it is a survey of 1,600 customers representing three million customers.

Mr. O'Connor: That is right, and the breakout of that 1,600 is covered earlier, where there is more residential and some industrial.

Mrs. Marland: That is fine. That clears that up.

Mr. Charlton: I think it is fair to say, as you read through the DSPS, that in your public consultation process, you listened to individuals, public groups, lobby groups and so on, and you have in some fashion taken the concerns they expressed into account in the document. Obviously, during the course of the next 10 days or so, we will be getting into some of the ways in which you have or have not taken those concerns into account. But now that the strategy stage has been released, what processes do you have planned when the final plan is produced to consult the public about the acceptability of the way in which you have taken their concerns into account?

Mr. Falconer: The short answer to that is that at this point I am not sure, but we are going to be dealing with it in the presentation that is scheduled on Monday, the second part of the consultation.

Mr. Charlton: So there are plans for further public consultation.

Mr. Falconer: We have a commitment that we will be consulting with the public, but I am not entirely certain exactly how we will do that.

1030

Mr. O'Connor: I think the president said when he was here that he envisaged and will seek public consultation and public input to future plans. Until we have those plans and have a little more specific understanding of what they are—

Mr. Charlton: The concern that was reflected in my question and what I was trying to get Hydro's thinking on is, did you get comments, for example, from the Minister of Energy (Mr. Wong) about this committee being the public part of the review of DSPS, where the expert panel and the interministerial thing is not public?

We start to get concerned that this is all that is going to be construed as public consultation in this and in the next phase. That worries some of us a little bit because of the limited time frame we have as a committee, and because of that limited time frame, the limited access the public has in getting to Toronto to talk to this committee. Then there is the indirect way in which Hydro gets its feedback.

Mr. O'Connor: I would say this committee is a very important public part of it.

Mr. Charlton: I am not saying the committee is not important.

Mr. O'Connor: But there are others as well.

Mr. Charlton: That is right.

Mr. McConnell: To go back to our presentation 1B, which we made yesterday, we listed the publics, if you wish, whom we had communicated with. That has been reconfirmed this morning to include the Legislature, the government, the customers, municipal utilities, electrical associations, special interest groups and the public.

I totally endorse and heartily agree that if we communicated only to the Legislature, that would be inadequate. I think communication to the Legislature is important and vital, but certainly the point you are making is well taken. It is by no means adequate for Ontario Hydro only to communicate here.

Mr. Charlton: Maybe I can just follow that up with a couple of quick questions. You have what I would call a fairly large public which works for Ontario Hydro. What kind of consultations did you have with the employees of Hydro in terms of both the consultation stage that went on a couple of years ago and the consultation that will go on around DSPS itself?

Mr. Falconer: What we have done on that is that over the past two years we have had a number of articles in internal publications, Hydroscope and Capsule, and have had face-to-face meetings. In recent months, we have had what we have called an employee consultation program where we have talked directly with about 2,000 employees to make them aware of what the planning strategy is and to answer their questions.

Mr. McConnell: To add to that, as far as employee communication is concerned, the 2,000 whom we talked to face-to-face constitute about 10 per cent of our organization.

In addition to that, we made up a video that was used to communicate to as many of all our staff as we could. That video was also used to enhance the communication because we tried to communicate our strategy, when it was developed, to every one of the municipal utilities. They are an extremely critical and key part of our family, particularly in terms of delivering the demand management programs. So that was not only a communication to our own employees, but also a communication to the key people in the municipal utilities whom we have to work with in making it happen.

Mr. McGuigan: I think it is recognized by people who study the behaviour of companies and so on that any major change in a company creates a great deal of turmoil. People start

asking themselves, "Have I been doing the wrong thing all these years?"

They tend to turn around and say, "The reason we are into this change is because of poor management," and so on. You get a big conflict within the organization, and the bigger the organization, the greater the conflict. Do you recognize that you have to do more than just some single-shot show of a few videos at a few meetings, that it is an ongoing and very continuous thing to make that change?

I guess if we want to think of an example, it is Mr. Gorbachev and the changes he is bringing about in that country and the resistance that is developing among his people. It happens in the Legislature. It happens in Hydro. It happens anywhere. I just want to make sure you recognize that and are adopting a continuous program.

Mr. McConnell: I could not agree more. It takes follow-through; it takes action; it takes repetition; it takes daily effort to make these things happen. These communications we are referring to were an attempt to communicate very broadly what was in the strategy and provide people an opportunity to communicate back to us the initial reactions to those.

Mr. McGuigan: That is very good. I am glad to hear that.

Mr. Charlton: I have one last question on this consultation part of things. Could you give us some examples of the statements that were put or the questions that were asked to elicit response from the public, so that we can get some kind of idea what it was people were responding to? I guess perhaps that goes for the survey as well. I am not necessarily asking for the whole package, but if you can give us some samples, it would be helpful.

Mr. Falconer: At our consultation meetings, we generally asked people what their priorities were in our planning and what they would like us to take into account. We asked them what was important to them. We asked them if they had a sense of how to make tradeoffs between competing considerations. We asked them specifically what they thought of different demand and supply options.

In the customer survey it was a huge effort. We asked a great many interlocking questions that were quite complex. I do not have those at my fingertips, but we asked an awful lot. I can certainly turn you to the Goldfarb survey itself.

Mr. Charlton: Just as an example, though, you would ask them what they thought of different options, as you have just said. I can

understand, for example, that some of the public interest groups go into a consultation session like that with a fair bit of knowledge about what the options are. Average citizens may have conceptually a feeling that conservation is good, but not too much information about what electrical conservation might be.

Mr. Falconer: What we attempted to do, for example, with the interest group meetings, was that we would have a session specifically on demand management. We would have a presenter who would be a senior executive discuss demand management to the overall assembly. Then we would break into small groups and what we would do was mix the groups by interest area. Actually, we did that by interest area and then we mixed together a cross-section. We had Hydro staff who are knowledgeable in that area to either initiate or answer questions. A small group tended to promote discussion.

We felt that when you are dealing in a consultation situation, the key thing is to make sure you get an open interchange and have an opportunity for people to listen.

Mr. O'Connor: Perhaps I could add that maybe the key answer to your question is that there was usually a presentation that preceded the discussion so that there was a focus group around the supply option, or the demand option or the planning process. There was a focus of discussion. The meetings with the provincial organizations—

Mr. Charlton: Maybe it would be helpful and save us a lot of time here if you could table with the committee a couple of sample presentations from the consultation sessions so that we can see what it was that stimulated the discussion and the responses.

Mr. O'Connor: You are also welcome to the survey if you want it. It was done by a company called Goldfarb.

Mr. Charlton: Sure. Thank you.

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Mr. McGuigan: On the matter of fairness, could you tell us what the participants' concerns were on the fairness in distributing the benefits of demand management, hydraulic and small supply? What were their concerns on the fairness?

Mr. Falconer: I think the fairness question principally relates to demand management. They feel that the benefits of demand management should be available to everybody. There is an inherent concern that benefits might not be distributed and you might be paying for some-

body else's benefits achieved through demand management.

Mr. McGuigan: They were not expressing concern about the fairness between the seller—the person who has, say, cogeneration or small supply—and Hydro?

Mr. Falconer: At a general level, I do not think there was a concern on that basis.

Mr. McGuigan: The concern was between one consumer and another consumer.

Mr. Falconer: Yes. Most people are more concerned with what immediately affects them. Unless there is a particular interest in cogeneration, then that generally would not apply.

Mr. McGuigan: I was just a little bit left up in the air. What is the question on fairness between one consumer and another?

Mr. O'Connor: Distribution of cost. Who shares the benefits? It should not be unfairly distributed so that one consumer who happens to save a lot of money reaps all the benefits. It is that they do reap some benefits, but that added costs are not incurred by another customer as a result of savings or actions by another customer.

Mr. McGuigan: How does that differ for the overall pricing system of Hydro, whether it is hydro-generated, a nuclear plant, Niagara Falls or whatever?

Mr. O'Connor: That is just simply the rate for electricity.

Mr. Falconer: I do not think that was the issue in the question of fairness. I think it was this matter of cross-subsidizing others who participate in a demand management program.

Mr. McGuigan: I see.

Mr. Falconer: I am sorry if I did not make that clear.

Mr. Matrundola: Reading this Hydro appeal to customers to cut back, I was wondering, is there a way we could possibly store Hydro energy, for example, energy produced during the night that could be supplied during the day? For example, we store energy in a battery and it lasts for a certain period of time. I wonder if there is any way we might be able to alleviate the problem by producing energy during the night and using it during the day when the peak hour comes.

Mr. Falconer: That is a technical question which I think others can answer better than I. I do not think we can, but perhaps I could defer that.

Mr. McConnell: The question of electrical storage is a question all utilities have asked themselves over the years. In so far as, say,

electrical batteries are concerned, I think it is fair to say that as far as the operation of the bulk electricity system is concerned, for generating at night and then delivering power from electrical batteries in the daytime, there is only a minute chance such electrical batteries will exist in the next several decades. It is not a good chance this technology will come about. Now, that does not mean to say it is impossible. It is just not likely to happen.

We do in fact have some storage at the present time. We take and we pump water at Niagara into a pump storage and then use that water in the daytime when we have peaks. That is an option. It is not the kind of option that would store from summer to winter, but it can be done on a daily cycle. But it is not cheap.

The other options we have are load-levelling. We will be talking to you about that as another option.

There are other things described in our report such as compressing air in underground vaults or letting water from Lake Ontario go down into a deep hole and then pumping it back out again. You get the power while you let it run down, that sort of thing.

We have studied these things, but it will not make a major contribution to our strategy during the next 10 to 20 years.

Mr. Matrundola: Perhaps we should take it into consideration in the long range. Twenty years ago, the Candu generators were not even thought of or they were at a very primitive stage. Fifty years ago, the only way of generating power was windmills, the Falls, generally from water and so forth. Perhaps we should start looking into the future. After all, if mankind has been able to go to the moon, we should be able to find ways to store energy for the future. If we do not start today, we will be at a disadvantage tomorrow.

Mr. McConnell: I quite agree with your point of view. That is why I was very carefully picking my dates. To categorically say that something will not exist in 2020 is not something we normally would want to say. But if you are talking about meeting requirements between now and 2010, you have to realize that whether it be Candu or something else, in fact you started on that road approximately 25 years before you had a major commercial contribution. I was really referring to a major commercial contribution before 2010.

In strategy 3.22, which covers the point you are making—it is in chapter 12, page 2—the choice between load-shifting and energy storage will

reflect the costs and benefits of each option. So basically, energy storage and demand-management shifting are two options that we have and they will both be considered in terms of the costs and benefits. So the concept you are talking about is recognized.

Mrs. Marland: I recognize that I am fortunate this morning because I am substituting on this committee on a subject in which I am tremendously interested.

I want to know what the procedure is as you see it as chairman. I understand you are trying to finish yesterday's agenda and then get into the five subjects that were listed for today. Is the matter that is now being discussed covered in either of those areas?

Mr. Chairman: As a matter of fact, it is not. Perhaps we could pick it up again when we get into the specific strategy that Mr. McConnell has just mentioned later on when we talk about the various tradeoffs. But in fact, what we are talking about at this moment is the consultation process. With your permission, Mr. McConnell, we will move on and perhaps we can come back.

Mr. Argue: I wanted to get back to a couple of supplementaries to questions that other members raised. You suggested in one of the first figures you put forward that there is an interchange in process; that Hydro will make a presentation and then there are responses. You flagged as a high concern this question of fairness and concern about perhaps subsidization within demand-management programs.

In your presentations to those in the public who would have that concern, I am wondering whether you raised issues relating generally to rates as they exist now.

There are inequities within rate classes, depending on customers' demands at certain times of the day. I would give you the example of two customers, one who is using baseboard heating and one who is not. Generally, they are using the same number of kilowatt-hours a month as a residential customer. Studies that I have seen examining that question would suggest that the customer who is using the baseboard heating cost Hydro more and those costs are put into that rate class and the customer who does not have the baseboard heating is in a certain way subsidizing the customer who does have the baseboard heating.

Did you try to communicate and balance the concern with regard to getting into demand management programs that there are already inequities within the rate-making system, that everybody will have an opportunity at some level

to get involved in a demand management program?

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Mr. Falconer: I cannot recall specifically if we mentioned those examples, but I can say for sure that we deliberately made a very concerted attempt to present a balanced picture and we tried to address all the costs and the benefits and not do anything that is one-sided. A lot of discussion raised these issues but the presentations themselves I think were as balanced as we could make them within the time limit that we had to give an opening presentation.

Mr. Argue: So you are not sure whether those sorts of examples were given.

Mr. Falconer: Not those specific examples, but I know that we did cover, in a fair-minded way, the cost and the benefits and the drawbacks.

Mr. Argue: But there were some rate inequities now.

Mr. Falconer: Honestly, I cannot remember what we specifically said on rate inequities.

Mr. Argue: I would like to follow up on an area that Mr. Charlton opened up on the types of questions that you asked. I would just like to focus on the figure 9.5, the highest priorities, reasonable rates. What sort of questions did you ask to elicit a response that said reasonable rates?

Mr. Falconer: In our customer survey, we asked people how they felt about the rates at the moment. We asked how they felt about increase. We went at the question of rates in a great number of ways. We asked if people would be willing to pay more for environmental protection to which they said yes. In our consultation meetings we attempted to get at how people did feel about rates, whether they felt that the present levels were all right and how they would feel about an increase, but we attempted to get from people their views, if they had any and wanted the opportunity to say them, on rates and the issues they felt around that.

Mr. Argue: The question I have is, are customers really concerned about rates, the price per kilowatt-hour or are they concerned about their bills?

Mr. Falconer: That is a difficult question to answer because a lot of people have not precisely formed an opinion on that technical distinction. People know that they want to enjoy the standard of living that they have and they want to be able to continue to do that. To the extent that is what they desire then they work backwards that rates are an important consideration in their life.

Mr. Snelson: Perhaps I can add something there. That is that we have a presentation next week on measures of cost which specifically addresses whether we are trying to minimize electricity rates or electricity bills. I was intending in that presentation to highlight the issue for discussion here that minimizing electricity rates is not necessarily the same as minimizing electricity bills when the quantity that is sold is different, and that our strategy is aiming towards the minimization of the total customer cost of electricity supply—which does not necessarily mean just minimizing electricity rates; it means going beyond that to looking at the cost of the customer's equipment as well.

Mr. Argue: One final point that is a question of Mr. McGuigan's concerning the corporate culture. It is something that would follow up with the presentation of Mr. Franklin this week. Within the organization specifically what is the reaction to the high emphasis placed on demand management and on cogeneration pursuits? Are there any concerns within Ontario Hydro with regard to the fact that it might delay the start of the next central generation facility—the Hydro project?

Mr. McConnell: No concerns whatsoever. We are giving highest priority to demand management.

Mr. Argue: But I am asking just in the consultation with Hydro employee groups, are there concerns within the employee groups with regard to the fact that demand management and cogeneration pursuit might delay the need for the next central generation facilities?

Mr. McConnell: I think it is fair to say that if you have 20,000 and some employees, every opinion that could exist does. So yes, I think there would be some people who were concerned because they had a vested interest. By and large, it is not a fundamental concern with our employees, but the corporation is committed to giving the first priority to the demand management.

Mr. Chairman: Mr. Cureatz, you had a short question.

Mr. Cureatz: Yes, a short question, and I think this is the time to bring it up. I mentioned it yesterday, and I want to again focus in on the people from Ontario Hydro. It always surprises me, when dealing with large corporations, that sometimes you miss the obvious. I just had a meeting with the president of General Motors, informing him about a dump site that is going to be placed right near its headquarters, which he

was not aware of, and I want to be reminding you.

We talk about a balanced picture to consumers of possible inequities in rates. I mentioned the other day about a particular area, the Courtice area. For those members who have ridings that have communities that are developing, electrical consumers who are moving into supposedly residential suburban areas can wind up paying rural rates, whereas across the road, under a local hydro commission, the rate will be substantially less. It is very difficult to explain to those people, when they live in a subdivision with sidewalks, curbs and gutters, why they are paying exorbitant rural rates.

We are wondering what kind of approach you have taken. Have you taken any kind of approach in those situations that have occurred? I am sure they must occur quite regularly across the province where you have a small community expanding into a rural area and the local hydroelectric commission does not have authorization to expand its boundaries. Have you approached this matter at all within the corporation, or do you plan on approaching the problem?

Mr. Falconer: That is a question I perhaps can defer to our panel.

Mr. McConnell: I think we will be making presentations this morning on the subject of power costs.

Mr. Cureatz: OK. I will gladly wait.

Mr. McConnell: Perhaps I may ask Mr. Cureatz to wait until then.

Mr. Cureatz: No problem.

Mr. Chairman: All right. Why do we not then move on to our next subject. We have canvassed this one pretty well, I think. Perhaps Mr. Snelson could come forward.

Mr. Snelson: Good morning. My name is Ken Snelson. I am the manager of demand/supply integration in the system planning division, which is a new title that I have to get used to because I have only had it for three days. It is essentially much of the same job as I had before in the planning of generation demand management and purchases.

My subject this morning is to address the question on what system analysis we did to support the development of the strategy.

The system analysis was very extensive, and I am just going to address it in a very general way to give you an appreciation of the sort of work that we did, to touch on some of the highlights and to illustrate how it was used to test the sort of strategic approaches that we could take to

planning the power system and the demand and supply options. I want to caution you that these illustrative, representative plans that we have talked about here are not fully developed, definitive plans of the type that we will be developing next year. They were illustrative of the type of factors that are influential in planning.

A substantial effort went into the analysis of representative plans. The background documents on this are extensive, and I have brought the main ones here, which, as you can see, add up to quite a pile of paper.

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However, in developing strategy, the important thing is not to get swamped with the detail. We have to stand back from the detail and identify the conclusions that are true over a wide range of the detailed studies. These are the lessons for strategy development that are important.

Why do we do system evaluations? We have done evaluations of options, but we also put them together and do systems evaluations. The reason, of course, is that it is important to view the whole system. When we look at just the pieces, we do not see how they fit together. What might look like individually good pieces might not fit together into a good system.

We study the system as a whole, and that tells us things we cannot learn by just looking at options. For instance, it tells us how one option fits with another. Load shifting, which controls peak loads, may work very well with a base load option such as base load hydraulic or a demand management option that is going to supply power or is going to save power day and night, but it may not work very well with another option, such as peaking hydraulic, which would only be available during peak hours. There are interactions between the options that you have to take into account.

You also need to study the whole system to determine the timing and quantity of needs: How much is needed under a low-load-growth scenario? How much is needed if the load is as forecast? What would the needs be if the load were to follow the upper trend?

Then you compare that with the capacity of the options. Some of the options have limited amounts of capacity they can deliver. We were looking at questions such as, is there sufficient demand management and independent generation from small hydro so that we would not have to build coal or nuclear plants again?

Also, when you come to the financial side of things, you put together the cost of the new plant

with the cost of the existing system and you come up with estimates of rates and borrowing requirements, capital structure of the corporation and so on, which are only available on a system basis.

On a technical side, the acid gas emissions can be evaluated only on a system basis. One wants to know how much coal-fired plant you can install until you get to the point where you just cannot meet the acid gas emission regulation or it becomes very costly to meet that regulation.

By going a stage beyond this and looking at a plan assuming the load-growth changes and seeing how you can change the plan, by doing a large number of such studies, which we call decision-tree analysis, then you can study the flexibility of options and how they can respond to variations in load growth. That gives you a means of quantifying the flexibility of plans.

These representative plans that we looked at were built around four broad strategic ideas. Some of them were mostly demand management plans. We looked at incentives for load shifting, we looked at incentives for more efficient use of electricity and we even looked, in some options, at plans which said when we cannot get enough of that sort of thing, we will just raise the price of electricity so people use less. We looked at the implications of that sort of plan.

A second approach was to look at mostly supply options. These plans had mixtures of independent and alternative generation, hydraulic, fossil, nuclear and purchases from outside the province.

We had a third group of plans which looked at mixtures of demand and supply, trying to get the best from types of options.

A fourth, rather different strategic idea was to say, let's distribute the demand management and the generation around the province so that it matches load quite well on a regional basis and we do not have to build major transmission.

So these sorts of strategic ideas were explored. They are somewhat coarse in their development because they were looking at extremes, and I do not think you should look upon these as alternatives to the DSPS. They are lessons to learn about how we went about arriving at the DSPS.

Within these families, you can see the representative plans that we have here, and they explore the sorts of ideas I have explained.

Within the mixed family, we also did a different sort of exploration where we looked at variations on when you start the approval process

for a plan. Do you start it based on the timing that would be required for the upper load growth or do you wait until you need something for the medium growth? What sort of flexibility does that give? We looked at some variations in that area.

Within the mixed plans, all of them had demand management with a moderate level of incentives and all of them had some independent generation and some hydraulic, like the plans we have at Little Fish Creek and Niagara and the Mattagami.

When you come to the bottom of it, with all the flexibility options we looked at and the sensitivity studies we did, there were well over 100 individual plans when you come down to the actual detail of it.

In the studies that were done, and there is virtually a report on each one of these, we looked at the long-term costs: What is the cost over the lifetime of the plan of one plan versus another?

We looked at financial impacts: How does that impact on electricity rates? Does the impact of all customers paying for demand options and thus reducing supply increase electricity rates, and how much? That was looked at.

We looked at the transmission implications on transmission plans and, clearly, according to how we did this, there would be different transmission implications. We looked at social and community impacts, such as the distribution of employment creation across the province. We looked at broader provincial economy impacts, including the impact on the gross provincial product and the total provincial product. We looked at environmental impacts and so forth, generation and transmission.

We took a broad view of all these particular areas, and when we came down to risk analysis, we looked at probabilistic analysis of the costs. We looked at the sensitivity to changes in nuclear costs. We looked at the sensitivity to changes in fuel costs. We looked at the flexibility of plans to respond to different rates of load growth and to rates of load growth that change part-way through, where you start on one path and you want to change to another. We looked at what were the proportions of different capacity on the system and the proportions of energy on the system and whether that provided a diverse mix of supplies that would be resilient to major shocks. We looked at a whole variety of subjects.

As I said at the outset, the purpose of the analysis was to be able to stand back from this mountain of detailed results and say, "What have we learned that is true over a wide range of

conditions and that will be useful in developing a durable strategy?" In other words, what are the lessons for strategy development?

I have put up four of them. They are really intermingled throughout the strategy and will be coming up throughout the presentations of next week, but I just put up a few here to give you an idea of the sort of thing we are talking about.

One of the lessons we found out was that with demand options, we believe they can make a substantial contribution. The provincial economic studies showed that demand options tended to have a beneficial effect on the total provincial economy and we found out that, to a fair degree, they were affordable to the utility and that electricity rate increases due to demand options would be there but not particularly high.

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On the nuclear side, we found that when a major supply is needed, the nuclear costs appear to be lower than other major base load energy supply options. That was true over a wide range of sensitivities. We looked at sensitivities to nuclear capital costs. We looked at things like what happens if the disposal costs are two or three times as high as we currently think they are. We looked at quite wide ranges of sensitivity and, over a wide range, we came to the conclusion that the nuclear costs were relatively low.

As far as the fossil was concerned, we found that no matter what you did in the base scenario, for the upper growth scenarios, fossil options were needed in virtually all the upper scenarios, and that for that sort of role, short lead time would be very important and likely, under those circumstances, we would be pressed to meet the environmental emission regulations and would be doing relatively expensive things to meet the emission regulations. Consequently, lower emissions would be very valuable for that sort of role.

Those are just a few of the lessons we learned from our strategy development. As I say, others will come out throughout the rest of the presentations.

Mr. Chairman: Are there any questions by the members of the committee relating to the subjects which Mr. Snelson has been speaking about?

Mrs. Marland: When you are looking at the long-term costs when you are evaluating one method of generation versus another, especially because of the controversy at the moment about nuclear generation versus fossil fuel, have you said somewhere in this report where your weighing factor is, including the cost of near

perfection of coal-fired thermal units, in terms of clean air?

Mr. Snelson: As far as the coal-fired units were concerned, in our analysis of individual options we assumed we would take sufficient measures elsewhere in the system so that any new coal-fired plant would end up with zero increase in emissions. As far as the plans were concerned, all the plans, whether they use coal-fired plant or not for additions, were designed so they would meet the environmental emission regulations.

Mr. McConnell: Let's take a practical example. Let's suppose we built a new coal-fired plant and it had some sulphur dioxide emissions. Obviously, that new plant would be tending to add to the emissions. What Mr. Snelson was saying is that we would simultaneously adjust other plant so there was no net increase in emissions.

Mrs. Marland: Speaking as someone who is not entirely thrilled with where we are with emissions—and I do not think that in a perfect world, Hydro would be completely thrilled with where we are—I know we are improving and I know we are heading in the right direction with our emissions from coal-fired thermal units. Nevertheless, we are not yet where we need to be.

I can understand with new technology and improved technology that new coal-fired plants would meet emission requirements. I think that goes without saying. My concern is that if you are looking at your overall demand options for the future in planning for the supply of electricity in Ontario, you have to look at using existing coal-fired thermal units. I think we have 12 or—I do not know how many we have. Is it 12 existing plants?

Mr. McConnell: We have 20.

Mrs. Marland: We have 20 existing coal-fired—

Mr. McConnell: Fossil stations.

Mrs. Marland: Does fossil include oil?

Mr. Snelson: Yes. If you add the oil, you have got a few more. You have eight at Nanticoke, four at Lambton, eight at Lakeview, four at Lennox; and then you go to northwestern Ontario, where there are two operating at Thunder Bay, a third one mothballed and one at Atikokan, so you are getting into the 20s.

Mr. McConnell: There are 22 coal.

Mrs. Marland: We have about 22 coal existing?

Mr. McConnell: Units, yes.

Mrs. Marland: Units, I recognize. And each unit has a stack? At Lakeview they do not.

Mr. McConnell: No, there are fewer stacks than there are units.

Mrs. Marland: Thank goodness.

Mr. McConnell: The number of stacks has nothing to do with the amount of emissions.

Mrs. Marland: No, but when you tell me that there are eight at Lakeview, I know how many stacks there are at Lakeview, and we certainly are not thrilled with four stacks at Lakeview.

When you are looking at this long-range cost option, which is what you have to look at—and I respect the balancing act that you are doing between one type of generation and the other—are you very direct? I do not want to say “honest,” because I know that you are honest in looking at your own figures and projections. But are you very direct at weighing the cost of making sure—now you tell me 22 plants—that 22 existing plants that use coal would meet standards for air that is as clean as possible?

I am not talking about the emission projections here, because we know that the emission projections are not perfect; we know they are reduced from what they have been in the past. But because they are a long way from being perfect, if you are balancing the cost of nuclear generation and the disposal of nuclear waste after that use versus using coal-fired thermal units, have you included the cost of whether it is a scrubber technique or whatever the technique is so that you finally come to perfecting clean air out of those coal-fired thermal units? Have you balanced the real costs between the two?

Mr. Snelson: I think perfection is something that is very difficult to get. We have an emission regulation that requires us to reduce our acid gas emissions by approximately 60 per cent from what they were in the early 1980s; that is across the whole system, for all of the units added together. We also have local air quality regulations around each station, which we respect.

The plan evaluations that have been done all meet the environmental emission regulation, that reduction by 60 per cent, and they have sufficient built into them to give us a pretty high confidence in being able to meet that emission regulation, because of the uncertainties that we face. So not only do we aim to meet the regulation; we aim to be sufficiently below the regulation that day-to-day uncertainties are not likely to push us over.

Mr. McConnell: In an earlier presentation we identified that, for any option to be acceptable, it

must meet environmental acceptance and it must meet public acceptance.

Mrs. Marland: Right.

Mr. McConnell: All the costs that we incur in order to achieve that are included in the cost estimates that were in this representative plan study, so all the costs were included to achieve the desired result.

Mrs. Marland: Now, the important point of what you have just said is that public acceptance is part of the weighting factor, and public acceptance is based on public understanding and public information. Very often the public becomes concerned about matters, environmentally speaking, because of misunderstanding—lack of understanding, not necessarily misinformation. I am talking about any polluter.

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The fact is that the public fears what it does not know and does not understand. I think it is by 1994 that you will have those emissions down below the 60 per cent of what they were in the 1980s. I also know that it takes at least three years to emplace scrubbers through the environmental assessment process in existing plants.

If you are looking at what the demand will be by 1994 and at where you should be going with what type of generation to meet those demands, and the next thing you will look at is your costs, I accept that it is not a perfect world but I am still not clear whether the cost of emplacing scrubbers in those 22 existing plants is written in your comparison figures so that I can stand on a public platform and say, “Yes, we are still generating with coal, because we need to.”

Even with Darlington coming on stream, I know that at some of these coal-fired plants that are mothballed and that are at 10 per cent production—like my own, which I think is only at 10 per cent production right now—to meet the demands by 1994, you are going to have to fire up, certainly more than 10 per cent, and you are going to be firing them all up again.

You say that you are still going to meet the environmental requirements of the 60 per cent reduction, but what I want to get at is, if nuclear generation is completely clean to the environment, and the cost to make coal-fired thermal units completely clean puts the cost of coal-fired generation over nuclear, it is a very important decision, recognizing also the cost of disposal of nuclear waste.

Mr. McConnell: We will be making presentations next week in terms of what we call clean-coal technology. In our evaluations that

Mr. Marriage did present in presentation 7 yesterday, on figure 7-4 is what we call the list of basic criteria that have to be satisfied.

When we talk about evaluating cost, we really mean the evaluation of cost taking those basic criteria into account. On that figure 7-4, if you find it, you will find that in the plans that Mr. Snelson was talking about under the subject of environmental assessments, we did not regard a plan unless we had in it the cost that would meet the regulations and, in addition, minimize impacts, because we go beyond the regulations, as I am sure you are aware. Those costs were all intended to include the costs that had to be expended in order to get the results that were acceptable to society.

Mrs. Marland: So that is meeting the regulations by the Ministry of the Environment that are in place today to be met by 1994.

Mr. McConnell: We identified also yesterday that we live in a dynamic world, and the regulations keep changing on us. What we have to do is to put that into our uncertainty analysis. I identified in my presentation yesterday that we intended that our strategy be robust and that it assume that there could be different requirements imposed upon us. Therefore, we want a strategy that takes that into account. We fully agree that nothing is static. We do not know exactly what requirements our society will establish in 1996 or 2000.

Mrs. Marland: No, because fortunately we are in a better situation today than we were 10 years ago in terms of emissions. What you are saying is that, in meeting the regulations of the two types of generation, your costs are equal?

Mr. McConnell: No, our costs are included.

Mrs. Marland: Yes.

Mr. McConnell: When the costs are included, we were saying that, for coal-fired plants, they serve a good economic role for peaking where they do not have much energy production and much emission, but for base load we find that the nuclear is considerably lower in cost.

Mrs. Marland: Including the cost of the disposal of the waste?

Mr. McConnell: Yes. All of the nuclear costs include the cost of disposal of the waste and decommissioning of the plant. Those costs are intended to be all-inclusive.

Mrs. Marland: This is my final question, Mr. Chairman. Why has there been the criticism, then, that Hydro has not looked at including the costs of the disposal of nuclear waste and the

higher-than-anticipated costs of the maintenance of the reactors?

Mr. McConnell: I do not think I could answer that question. You would have to ask the critic, because the costs are included.

Mrs. Marland: I am not referring to the critic. I am just referring to the general—maybe the critic has said that.

Mr. McConnell: With the majority of people we have talked to and who have asked that question, we have communicated to them—When we talk to the Ontario Energy Board annually, for example, it is painfully aware that the costs are in there, because we review them with it every year. I think there is a good percentage of the public that is aware that we do have those costs included. On the other hand, I acknowledge that that does not mean to say that 100 per cent of the public knows that those costs are included.

Mrs. Marland: No, which we would never have 100 per cent of the public knowing.

Mr. McConnell: Right.

Mrs. Marland: Then just another way of asking the question—

Interjection.

Mrs. Marland: I will. Just let me finish this one point.

Mr. Chairman: Would you like a supplementary on that?

Mr. Charlton: On what was just raised.

Mrs. Marland: Go ahead, Brian.

Mr. Charlton: Mr. McConnell has raised the issue of the rates including costs for decommissioning and waste disposal, and I think that is a fair comment. But I think it is somewhat misleading to leave the impression that 100 per cent of the costs of decommissioning and waste disposal are necessarily included in the rate structure.

For example, you do not know yet what kind of requirements are going to be placed on Ontario Hydro in terms of waste disposal. We do not have an approved waste disposal method or site, and the same is true with decommissioning. I think it is fair for you to say that there is a proportion of the rate you pay that is being set aside, supposedly, for waste disposal and decommissioning, but I think it is unfair to leave the impression that you have actually calculated how you are going to do that and that these rates cover all of that cost.

Mr. McConnell: The intent is that our cost estimates do include 100 per cent of the costs of a

disposal. What Mr. Snelson was identifying in his presentation is that in anything we do not have experience on, there is an uncertainty, so what we did in these analyses was to put in an uncertainty analysis that Mr. Snelson was referring to. I think you used the expression that we doubled or tripled our cost estimates and that that sensitivity analysis was included in these analyses. Even if you double or triple that cost component, it has very little effect or impact, when you do the analysis, on the conclusion. That is what we meant by an analysis.

Now, we do not have zero experience in terms of dealing with rad waste, but it is intended that the cost be 100 per cent included. We do have a reference plan for rad waste and we do in fact have estimates for those costs and we do periodically update them and adjust them.

Mr. Charlton: I understand all of that. I guess the point I was trying to make is that there is an uncertainty there, and that is not what I think was being left as an impression.

Mr. M. C. Ray: Supplementary, Mr. Chairman?

Mr. Chairman: Just a short one.

1130

Mr. M. C. Ray: Take a specific allegation that is made. The Pickering experience, where you needed 12 years for retubing, is at variance with your predictions of 30 years on future plans before any retubing will be necessary. Is that true or not true?

Mr. McConnell: Are you talking about the cost that is associated with the retubing?

Mr. M. C. Ray: Yes. The allegation has been made that you have underestimated your costs of modification of plants. They take the specific example that you are not using your experience in Pickering in your forecasts for other existing and future plants. Is that true?

Mr. McConnell: The studies we have done, which have to do with the nuclear option, do include a sensitivity analysis, considering that our reference plan at the present time is that we will have to retube every nuclear plant at least once during its lifetime. That has always been true. At the present time, our technical judgement is that if we committed a new station, the probability is that we would retube it once, not zero times and not twice. However, when we do our cost analysis, we also do a sensitivity analysis, assuming that we might have to retube it twice. That is included in the system evaluation.

Mr. M. C. Ray: On the waste disposal costs, last night I happened to watch a news item about Sweden. One of the reasons for their decision was the cost of storage for 10,000 years, they said. I do not know how you would estimate a rate structure for the cost of waste disposal for a 10,000-year period. What is your response to that?

Mr. McConnell: We did make the offer to make a presentation to you on radioactive waste if you so desire. That was one of our offers during my opening remarks yesterday.

However, to give a short answer to your question, we recognize that radioactive waste is a very important and major public concern in Ontario. We acknowledged that in Mr. Penn's presentation yesterday. That has to be dealt with and that is a concern to us.

I think in our communications to you, if you do want us to make a presentation, we would have to acknowledge that we will not be eliminating the public concern, but we would like to communicate to you that we think it is a public relations problem more than a technical problem.

The facts are that, to take uranium, it is dissolved in the ocean, there is a massive amount of it in the ocean, it is in every stone, it is in this building, it is everywhere. It is all over the place.

When we take high-grade ore from the Elliot Lake area, make it into a fuel bundle and put it into a reactor, it becomes very highly radioactive; if you come back in 300 to 500 years, you can pick it up again in your arms. So I think there is a great deal of exaggeration about the lethal consequence of fuel, talking about hundreds of thousands of years.

Mr. M. C. Ray: Mr. Chairman, can we perhaps—

Mr. McConnell: It is entirely up to you whether you want a presentation on this, but we are getting off the subject here.

Mr. Chairman: I think it is quite likely that we will indeed be doing that. Was that your question, Mr. Ray?

Mr. M. C. Ray: I think we should, because it is of such public concern. For that reason alone, we should have a special session on it.

Mr. Chairman: Our fall hearings are being put together now, and I think it very likely we will be hearing on that subject.

Mrs. Marland: I must say I support that suggestion by Mr. Ray. I spent 10 hours at Darlington. I went there about three months after the Chernobyl disaster. I went there with a television crew and we filmed for 10 hours. I

went there with all the apprehension that everybody had and came away with a great deal of confidence and reassurance. I am not saying I became an instant expert, but I knew a great deal more than I did when I went. I really wish the public could have that kind of information.

I think it would be excellent for this committee to have it, because then each one of us can be responsible for disseminating it as much as we can. It comes back to the point I made a little while ago, that fear and apprehension are born out of ignorance—not inherent ignorance, but just ignorance of what some of the true information is.

To talk about the cost, which is just to focus back on what I was going to say, when you are looking at the generation alternatives—and I appreciate the point made by my colleague Mr. Charlton—when you are looking at reactor maintenance in terms of nuclear generation and are talking about the replacement of the reactor tubes and so forth, when you look at new nuclear plants, what I would like to know is—

I understand that at Three Mile Island, for example, the fracture lines in its tubes were expected to show up in 25 years or something, and they are showing up now. Yet at new plants, where the technology has been so much perfected over that at some of the older nuclear generation plants, fracture lines or failure, whatever your terminology is for the description of what happens in layman's language, those fracture lines are now not expected to show up for perhaps 60, 80 or 100 years.

Is it true that when you are trying to project your costs of nuclear generation, the kinds of costs we are talking about today with Pickering or any of our own plants, which are now older plants, will in fact be reduced in future reactor maintenance because of the perfected technology in how the plants are designed and constructed?

Mr. McConnell: Yes. I think there are two forces on us having to do with cost. Quite clearly, technology and experience tend to give you an opportunity to reduce costs for the next plant you build relative to the one you had experience on. However, there are other forces that cause costs to go up. An example of these other forces is that a new plant might have new, different requirements that have to be satisfied.

Mrs. Marland: By higher public expectations, you mean?

Mr. McConnell: Yes, it could be a higher public expectation that creates a new requirement. In addition to new requirements being imposed, you may also find yourself paying

higher rates during the capital phase. For example, people might get paid the same wages but work shorter hours, and it takes a few more dollars to do something in the future than in the past. There are quite a large number of parameters acting on us, and there are other things that tend to reduce the cost, such as increasing unit size. We do not have plans to do that at the moment, so we would not be taking advantage of that in the near future.

When we are evaluating costs in the future, we really start from a base of what we know and then make adjustments to it, but our estimates for our generating stations for the future are not radically different from what we already have cost experience for.

1140

Mr. Chairman: I note that it is 11:40 a.m. and we have a few people who would still like to ask questions. I would ask that the members perhaps direct their questions to the analysis of representative plans presentation Mr. Snelson made and note that we are going to be covering back some of these subjects next week, so this is not the last chance we will get to speak on the particular detail.

Mr. Charlton: I have some concerns about at least the way in which the weighing of the options part of DSPS has been presented. Unfortunately, like some others, I have not been through all of the background documents, so I cannot say with any assurance that you will not have done some of the things I am going to raise, but I certainly have concerns with the way some of this is presented in the DSPS document. I will just throw some examples at you so I can try to get some comments.

In chapter 10 there are a number of statements made which, on their own, are likely very correct but become very confusing when you read one over and against another. There is little or no explanation of what the impact of that is on individual options, the plan itself or the range of plans that you have looked at.

I will just give you a couple of examples. On page 10-8, "Plans with high incentives for demand management tend to have higher electricity rates than plans with more moderate levels of incentives." I think I understand that statement. It goes back to the question which Mr. Argue raised earlier about rates versus bills.

On the next page you have a statement, "High-incentive demand management programs have positive provincial impacts." I think both of those statements are fair and correct, but they are misleading to the average person who reads that,

especially when you look at the title you stuck on figure 10.5, which is, "Average Customer Cost of Electricity."

When people think of cost, they think of the bill, not the rate. It is table 10.5 which deals with rates, though not with bills. So when you read through that, you get left with the impression that, although the high-incentive package will work, there are some negative aspects to it; but if you read very carefully some of the fine print and understand the misnomers in some of the titles, then you can start to piece it together.

I am basically saying it is presented in a very confusing way. I guess the best example I can give you of that is if you go back to page 10-7 under figure 10.4. You have a paragraph there that says: "If Ontario Hydro paid all the cost of economic energy efficiency improvement measures, the most likely load growth can be met to 2007 without adding new generation. This assumes that existing plant can be renovated, and the contribution from demand management programs is as expected and the necessary transmission is installed. However there is uncertainty as to the degree of public acceptance of demand management."

Now, you get a statement here which is very positive in nature and then you throw in this: "However, there is uncertainty as to the degree of public acceptance of demand management." Yet in the presentation we had this morning, in figure 9.6, under "Directions suggested by the participants," the first thing on the list is demand management.

That all becomes very confusing to people trying to pinpoint what is going to work and what is not. I think you understand by the examples I have given you how it becomes confusing or at least misleading to people's sense of what it is they are dealing with.

Mr. Snelson: If you want to say that the world is complicated, that there are factors which push in opposite directions and that in the real world you have to manage to find a course between conflicting forces, then undoubtedly you are correct and the document is confusing because the real world is somewhat confusing.

With respect to the comment you raise on demand management programs and the uncertainty of public acceptance, I think there are two very different types of public acceptance. There is the question about whether people are receptive to it as a general idea, and undoubtedly the public consultation program has shown that in terms of the general idea, people are very receptive to the idea of demand management.

The uncertainty that we are talking about is how customers will respond to programs that are offered by utilities in the real world when they are making their decisions about buying their electric lights, their electric motors, refrigerators and so on. I can recall in the previous hearing Mrs. Grier—who is not here today, unfortunately, to defend herself—pointing out that she had been in a hurry when she was out to buy her refrigerator and had not had time to look at the energy efficiency label, although that was something that was of interest to her.

I think we have to differentiate between what is acceptable to customers in general and what is acceptable in particular when it comes down to individual decisions. People are in favour of motherhood, but who wants to be pregnant?

Mr. Charlton: That is exactly the point I was trying to get at earlier this morning when I asked what kinds of things were asked in the public consultation process to elicit the responses. You are right: Even though the public is generally supportive of demand management, there are going to be certain potential things that the utility could do or the government might do by way of legislation or regulation that will be offensive publicly.

I guess what I am trying to find out, because this document does not tell you anywhere, is what did you learn from the public consultation in terms of that question you are expressing of uncertainty? You have not told us anything here about what the uncertainty is, what kind of demand management the public is supportive of, what kind of demand management the public would not accept. How can we assess the real ability of Ontario Hydro to capture the demand management you are talking about here if we do not know and if you have not learned from the public what it is that is acceptable, besides just the generic term "demand management"?

Mr. Snelson: I think when you look into the detail of the consultation programs—and the Goldfarb survey is available, as I understand it—you can see the sort of questions that were asked, and they were not just the general question, "Are you in favour of demand management or not?" There was probing about, "Have you thought about changing your heating system recently? Would you be interested?" and so on. We tried to get to some of these sorts of questions, and I have not got the detail here with me.

At the back of the DSPS document, chapter 14, is a listing of reference documents that provide the detail that was too extensive to be

included in the document—it was fat enough as it was—and that is available if you want to look into it.

Mr. Charlton: I understand all the background documents are available and that, in terms of facts and studies, there is far more than exists here. What I am suggesting here is that the rationale for the statements that are made is not clearly set out. You are not explaining very well what it is you are claiming to have learned. You may understand it, but those of us who have to try to assess this document and the direction it sets out, until you wade through it the third time, sometimes get quite confused.

As I suggested, I think you can see, for example, where you take a statement like the first one I read, about how plans with high incentives tend to have higher levels of rates, and you use the word “rates” there, then you throw in figure 10.5, which is the table that is explaining that statement, supposedly, and you use the words “customer cost”–

Mr. Snelson: I think that is incorrect and I think we made a mistake.

Mr. Charlton: That is right, and it just tends to mislead people about whether that kind of incentive-driven demand management is going to be a benefit to them or, in fact, is going to cost them money in the long run. That is why I say it gets very misleading in the impressions that get left.

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Mr. McConnell: I think we would accept the point you are making, in terms of the difficulty of understanding a representative plan analysis. It is not an easy concept to communicate.

The select committee in 1986 recommended that when we developed our strategy, we present it to the Ontario Energy Board for review. That process involves legal counsel and involves a process we are quite familiar with, so we have tended to learn how to prepare documents which are appropriate for that forum. When we prepared this document, we had that in mind. A decision was made to bring this document before this group for review. That is why we are presenting you with somewhat different presentations today and next week. Our purpose was to clarify.

Mr. Charlton: Just one further question on the representative plan’s approach. I think I understand why you would want to do the mix-and-match representative plan approach as part of this planning strategy. To what extent, though, did you do analysis of the options

separately? To what extent is there now study data available on each of the individual options?

Mr. Snelson: The individual option study data, which were done primarily for this, are described in chapter 8 and its supporting documents. That is getting a little old, and some of that data has been updated since. There are internal documents and so on and other studies which have updated that sort of information on the individual options.

The across-the-board analysis of options was done as phase 1 of these studies and was reported at the end of phase 1, which is summarized in chapter 8 of this document.

Mr. Charlton: So there are statistics available on all of the options, in terms of what that option consists of—I am specifically referring to the demand management stuff now, and the conservation stuff and things like that, which we have had so little data on in the past; we just did not have any Ontario data available during our last set of hearings two years ago—the timing of the option, the costs of the option and the effect on rates, and the whole package?

Mr. Snelson: We have been working very hard to acquire additional information about the demand options. Mr. Palmer will be talking about them, or talked about them in the flyover on chapter 8. Some of the people from the energy management branch, including Mr. Palmer, will be talking about them in more detail next week.

I do not think we would claim we have every last bit of data on the demand options. There is a lot more to learn, and we will learn a lot of what we need to know as we go about trying to implement them. There are things you cannot find out in a general sense; you have to go out to try to see how people respond.

Mr. Charlton: Again, I will just quote to you from the DSPS document itself. You get conflicting statements such as: “The amount of demand management that can be achieved in any particular level of incentives is uncertain. Reducing this uncertainty could defer the need to start planning for supply facilities. Early market research and implementation of demand management may help resolve this uncertainty.”

That kind of statement leaves you with the feeling that you still do not have any real, hard data on demand management at all. Then you get a statement like the one I read earlier, where it says if we pay 100 per cent of the costs of efficiency, we can accomplish all of this up until the year 2007, which leaves you with exactly the opposite impression, that somewhere there are

some hard data. But this study does not set out any of it for us.

Mr. Snelson: I think there are a lot of data still to acquire. You can talk about that in more detail with the people who are intimately involved in acquiring and using the data and implementing demand management programs.

Mr. Chairman: Mr. Argue, did you have a brief supplementary to that?

Mr. Argue: The supplementary I would have is just on the date of most of the options. They would cost at 1984-85 data? You have updated some of the options, but most of the reference you are talking about in the DSOS was from 1984 and 1985.

Mr. Snelson: That is correct. I think it is important to recognize that for strategy development, it is the broad relativity of options that is important, rather than the detail. We expect the detail to change.

Mr. McConnell: I think it is a very crucial point that if you go through chapter 1, page 3—and I would like to emphasize this point—we did this study between 1984 and 1988. Obviously, the data in 1988 are different than they were in 1984, and they will be different again in 1992, but we wanted a robust study in which we had a strategy that was independent of the data that may change from year to year, so we put into the document:

"The evolving nature of the studies and associated results over such a long time period makes it virtually impossible to have every part of the study based on the latest data available. However, care has been taken to ensure that independent portions of the studies, such as the comparison of options and the evaluations of illustrative plans, are based on a consistent set of data and assumptions in each case."

We went on to point out that the strategy does not depend upon precise data, and I would like to emphasize that. You can change these numbers around, and we are saying we can demonstrate that the strategy is robust and it stands on its own merits, even though the data may change from year to year. The demand management that actually materializes may be higher or it may be lower, but we are saying our strategy is that we are going to go after everything we can get that is economic.

Mr. Argue: I recognize that this has been a long process. I also recognize the point you make that it is not critical that we be entirely accurate in all of the options. But what we are in the process of doing is judging on how the strategy might be

implemented on the next level to see how you have looked at the options.

What I see directly is that, comparing back from the DSOS to what comes up in the DSPS, most options have not been updated from 1984 and 1985, yet you have done significant updates on costs, such as nuclear costs. I would point out that there is a drop of five to eight per cent on those costs in that time frame.

Mr. McConnell: We have said that we have examined that and that sensitivity does not change the conclusion of our strategy. We so state it in the document.

Mr. Argue: We will get to some of those more specific questions in a written form.

Mr. Chairman: Shall we move on now to what was intended to be this morning's agenda?

Mr. McConnell: We are just about half a day astern the station, I guess.

Mr. Chairman: If we can have this sitting extended to 12:30, it will give us another half-hour today. If we could go through the introduction from Mr. McConnell and perhaps the presentation on the first item, customer satisfaction, then we could call for questions at that point.

Mr. McConnell: OK. That will be fine. Perhaps I should start off by saying, Mr. Cureatz, I have no questions to pose to myself.

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Mr. Cureatz: I was just wondering if we are doing our own best to conserve energy. If we are, could we open the door?

Mr. Chairman: Maybe we should fire this air conditioner back up; should we, Mr. Cureatz? I note it is a water-chilled air conditioner, not a heat exchanger, so we can do so with a reasonably good conscience.

Mr. Cureatz: I would not want us to be criticized by the press as members of a committee who did not do their bit.

Mr. Chairman: We could keep the lights off.

Mr. Cureatz: That is true. What is the general consensus?

Mr. Chairman: Maybe we could stay for half an hour and sweat it out.

Mr. Cureatz: OK, but open the door.

Mrs. Marland: I will open the door.

Mr. Chairman: Thank you, Mrs. Marland.

Mr. McConnell: Mr. Chairman, if I may, I would like to introduce Dane McCarthy, who has just joined the panel. Mr. McCarthy is the vice-president in charge of our energy manage-

ment branch. On three occasions yesterday you asked questions specifically regarding rates and fairness and I put them off until Mr. McCarthy was here, so I would ask you to put your questions to him after his appearance.

The purpose of this presentation is to introduce you to our next series of presentations. We now have gone over the first 10 chapters that are in the document all of you received. I explained at the outset that the purpose of those first 10 chapters was to give you a background understanding. What we would now like to do is to move on to chapter 11, which is our introduction of the strategy and the rationale that goes with it.

Chapter 12 contains the strategy, which is identical to that which is in chapter 11 except it does not have the rationale, and so this whole strategy, as I said before, boils down to six pages. We will be, in the course of the presentations today and next week, making presentations that get into the brass tacks associated with these strategy elements.

I would like to take a moment to introduce to you the strategy structure and the priority strategic directions. This is just to give you a broad idea of how we tackled putting the strategy together. As a foundation for developing of the demand/supply planning strategy, it is only a small piece of Ontario Hydro's activities.

Ontario Hydro's overall activities, of course, are embraced by our corporate goal. Our corporate goal reads, "To meet the requirements of the Ontario community for electric service, including the manner of its provision, so as to result in the greatest overall benefit to that community and in the greatest value to the customer for that service over the long term."

In that goal we focused that we are talking about Ontario, that we are talking about an electric service to Ontario and that we are talking about going about our job in such a way that it has maximum benefits to the Ontario community.

When we use the expression "the greatest value to the customer" or "the best value to the customer," that has a number of thoughts in it. First of all, what we are talking about is trying to make our decision so that we are providing that best value over the long term. The best value embraces the customer's use cost, it embraces the customer damage cost if we have power interruptions and it includes the cost of providing the electrical supply. So, by "best value" we are embracing all of those things.

That goal, although I am not going to cover it today, is made to come alive by some 36 objectives we have written, which get down to

brass tacks, which put the flesh on that. That is just a general, broad, short statement. Then we have all of these specifics that support it.

In addition to the goal that applies to the whole of Ontario Hydro, we have other things that also help to provide direction to the whole corporation. This includes a corporate vision, a corporate mission, a corporate set of values, some corporate guiding principles and an overall corporate strategy.

I am not going to present those to you this morning, but in the handout you have received, I have given you a full copy of the words that are associated with all of that corporate direction.

I would like to mention again what I mentioned yesterday morning, that the demand/supply planning strategy is a set of principles, guides and priorities which provide general direction in the development and selection of the definitive demand and supply plans for the future.

I would like now to talk about the structure of our strategy. It is in the document you have, but I would just like to touch on how we have put the strategy together so it will be easier for you to follow as we make presentations.

Following from the corporate goal and these other corporate things I have just mentioned: vision, mission, values and strategy—we consider those as corporate requirements which must be met, so we first set down a group of general strategic principles. That is package 1.

Then we have a set of strategic statements which are applicable to the demand options and are also applicable to the supply options. Those basic things which apply to both are package 2, and we will be presenting that to you.

Then we have a dedicated set of statements that applies to demand management, a dedicated set that applies to independent generation or nonutility generation, an independent set that applies to the really major supply, excluding purchases and then, finally, we have some strategy statements that apply to purchases, such as we would make from Quebec or Manitoba.

That is the structure of the strategy you have and that is the structure we will be using in making these presentations to you during the course of the remainder of today and next week.

Before we get involved in all the detail, I would just like to talk for a moment very broadly about what the essence is throughout this strategy. We call this the priority-strategic directions. In the 1990s, your electricity supply is going to depend to a very large extent on the system which is already operating right now. As I

mentioned yesterday, some of this plant is getting pretty old. We have hydraulic plant that went into service at the beginning of this century and a good percentage of the hydraulic is now well over 50 years old.

We have an awful lot of transmission that is over 50 years old. We have thermal plants, coal-fired plants, that are also reaching the end of their useful life. We either have to refurbish these plants, redevelop them or, indeed, we have as an option taking them out of service. But we have a lot of work to do and that is a part of our strategy, to maintain and improve existing plant.

Of course, we are giving top priority to pursuing all of the economic demand options. As has been pointed out in the discussion this morning, there is the question of what is economic and we will be getting into that in the detailed presentation.

Third, we are talking about encouraging independent generation, buying power to the degree we can that is economic and actively encouraging it. In addition to that, although we have not spent too much time talking about it now, we are also encouraging and promoting the development of generation by organizations to meet their own needs. In other words, we call this self-generation. We are in the business of promoting that as well.

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Fourth, we know that in terms of the needs that face us in the future, even with that top priority being given to improving our existing plant, pursuing demand options and buying and encouraging independent generation, the probability is that we will still need more major supply. Within that context, we are talking about favouring and giving preference, because of public values, to the development of the remaining hydroelectric. Because there is an extremely limited amount of hydroelectric that is left, we see that for the median and upper case, at the very least, we will need more of the more conventional supply options, that is, fossil and/or nuclear and/or major purchases from neighbouring provinces.

That is the general thrust of this whole strategy. It is based on those components. What we would like to do is to put the flesh on the bones.

What we would now like to do is to take you through the structure that I just went over with you, and we would like to make a series of presentations on these general strategic principles, and then we will take you through those other sections. At any rate, we have these six sets.

I would now like to call on Dane MacCarthy to present the first and most important strategic principle, which we call customer satisfaction, our reason for being. If you have difficult questions to ask, this is the guy to ask them of.

Mr. MacCarthy: I am always a little apprehensive when somebody sets me up in quite this fashion, but if you have any questions, I will try to do my best.

First, I would like to talk about customer satisfaction. Our chairman, Bob Franklin, emphasized the importance of customer satisfaction earlier. Mr. McConnell has mentioned it consistently throughout his presentations, and I would like to take a little time on customer satisfaction this morning. Basically, maximizing customer satisfaction and value is fundamental to the whole demand/supply planning strategy. Ontario Hydro is committed to this.

What that involves, I think, is a shift in perspective within the organization, a shift that Mr. Franklin talked about earlier. That is a shift from the view of electricity strictly as a product more to a perception of it as a service to our customers.

When we talked within the organization—and I think it has been mentioned earlier; Mr. McGuigan mentioned it—with this focus on customer satisfaction, people within the organization initially said: "What's the big deal? We have always been interested in customer satisfaction." That is true, but I think the perception has been: "If we generate the electricity, transmit it, distribute it and get it to the meter, we have done our job. If we do that well, that's good enough."

That is no longer acceptable in the kind of society we are in. We have to move past the meter and into the office, the factory and the home to make sure the customers are making the most effective use of electricity. We have to make sure that is done in a way that is publicly acceptable in terms of the environment.

The other dimension is moving from a focus of minimizing cost to a broader focus of maximizing value. I believe Mr. McConnell touched on this earlier. The public is expecting us to be energy consultants. They want us to tell them whether they need a new electricity application, whether they could use electricity more efficiently or whether they could do without. They expect that from us, and we intend to deliver that.

That may mean moving to a point where we are prepared to increase our rates in order to maximize that value, particularly if the overall result, as was discussed earlier, is a reduction in the bill. So it is not necessarily keeping our rates

as low as possible; it is looking at maximizing the total value to the customer. It is a very fundamental point.

The basic measure of our corporate performance is customer satisfaction. How do we measure this? We measure it on our day-to-day activities within the organization as we make customer contacts. These are just some excerpts from various surveys that we have conducted. If you are interested in the details, we can provide them to you. Basically, what it says is that the overall impression of Ontario Hydro is quite positive with our customers. We want to keep that. We want to build on that base. We want to improve that base.

But there are some specific areas that we have to address. For example, with our commercial customers, 64 per cent think we are doing a reasonable job on reliability. We think that should be higher. The industrials want more contact regarding cuts. They have been experiencing some of that within the last few days in terms of the advice that we provide to them and their having it in advance.

The bottom line is that we have a reasonable base to work from, and we want to build on that base. Let me just spend a couple of minutes describing our customer base, ours and that of the municipal utilities. As probably most of you know, there are some 316 municipal utilities. They provide service to 70 per cent of the end customers. I will be making a presentation later on about municipal utilities specifically.

If we look through the municipal utilities to the end customers, what this chart demonstrates is that roughly a third of the electricity use is in the residential and agricultural sectors, which we group together, and the commercial and industrial sectors. Obviously there are different characteristics in each of those customer sectors, but overall a rough balance. This is helpful in terms of our overall pattern of usage and contributes to one of the highest load factors in North America.

Talking a little more specifically on some of the customer sectors, in the residential sector, basically 50 per cent of the electricity used there is associated with space and water heating, 40 per cent is associated with appliances and the remainder with lights and air cooling. When we look at the customer needs, they are increased energy efficiency, comfort, convenience and safety. Price is an element that runs through, as was discussed earlier. But in terms of the particular focus on customer needs, these were some of the things that came out in our studies.

In the commercial sector, some 50 per cent of the electricity use is associated with motors, with lighting about 40 per cent and the remainder with space and water heating and air cooling. The focus on the customer-needs side is essentially the improved energy management and the high-quality environment. For most commercial establishments, the electricity component of their total operating cost is relatively small. What they are more interested in is the energy management side and quality of environment.

In the industrial sector, 75 per cent is associated with motors, with the remainder being process, heating and light. These are the people who have the greatest concern for our price level. They want to reduce their overall process costs. They are interested in technology and want to increase their productivity and competitiveness.

For each of these areas, in terms of the market analysis that breaks them down further—this is a broad sector definition—within that sector, we have more detailed studies looking at individual components: mining, manufacturing, automotive, food and beverage, pulp and paper. All of these segments within that sector have particular patterns of use, and we have to go through that analysis in order to meet their specific needs.

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That is some general background. What are we doing about it? What we are trying to do is focus on matching the products and service to the specific customer needs. We are enhancing the package of services that we provide and we will be getting into more detail in that regard next week.

I will just give you a few examples. We were talking the other day about the energy monitoring we are pursuing with our industrial customers. We have a substantial number of energy audits. We have demonstration projects going on, one of which associated with energy-efficient motors was discussed briefly the other day. We have financial assistance programs associated with pursuit of energy-efficient applications. We are looking at special rates for particular customers, and the key thing is working with the municipal utilities to make sure that those programs can be effectively delivered, because without them we simply will not be successful.

To respond to Mr. Runciman and Mr. Cureatz, I have some copies of some advertising that we have put together. This one here is something that you may have seen in a recent television guide. It says, "Use this coupon to insulate your home, replace a fuse, dry the dishes.... Send it in and we will send you some energy-efficient

information." I do not have enough today but I will give each of the members of the committee some of this information because it is good stuff. I think it can help you in your decision-making.

Another example was advertising such as this with a flower grower in a western region. We helped to reduce their heating cost from \$2.25 per hour to 75 cents an hour. We put out that. This is at Harbour Castle where we came up with some suggestions. The end result was a saving of some \$450,000 a year.

Those are the kinds of things. None of the programs we are advertising are pushing market share. This is a brochure associated with our high-energy-efficient motors and the incentive program and that is more detailed. What we are trying to do is build in those kinds of programs to satisfy particular customer needs.

In moving to a summary, we are committed to an energy-efficient Ontario and we feel that is reflected in our submission to the Minister of Energy. We want to be responsive to the customer preferences. We will be consistent with government policy. There is no question. The need for demand management has increased. Mr. Franklin has mentioned that. It is clear from the kind of load growth that we have that we have to get on with the job and deliver the demand management programs. The kind of load growth we have been experiencing is quite substantial. The public support is there and we want to get on with it.

Aggressive targets have been set. I firmly believe that. In every study that has been conducted in this area, the judgement is that the average impact in terms of demand management initiatives, the kind of initiatives that we have been talking about, would contribute in the order of six per cent to a peak reduction and eight per cent to an energy consumption reduction. It may range from as low as three per cent to as high as 25 per cent. That is the range that they predict in their study. We are right at the top end of that range. From my perspective, that is a contract that I will have to deliver and I intend to deliver.

A key issue here, and it was raised earlier on this issue of customer equity, is that we feel that participants should pay a portion of the cost, that it should not be completely subsidized. I was talking to people with Southern California Edison just a few weeks ago who have been in this area of incentives for a substantial period of time. They have set a limit of no more than a 30 per cent contribution towards the overall cost. They feel that is sufficient to influence customer behaviour. The other element is that the customer

should make a contribution in order to develop ownership in the application.

We need to offer a wide menu program so there is something for everybody. The key point here is that if we pursue an incentive program, say, for an industrial customer on an energy-efficient motor, that is going to cost us some money up front. That is going to have to be included in our rate base. Unless we have a diversity of programs that provide a similar opportunity to the residential or the commercial customers, there will be concerns in terms of equity treatment. That is an issue we have to address. The way we want to address it is by having a wide range of programs across the customer segment base.

The other issue is the level of incentives acceptable to customers in general. Associated with these incentives will be a short-term impact on the rates. The overall rate level is a significant factor, as we indicated in our studies, in terms of acceptance in the public's mind; so when we initiate these incentives, we have to consider that dimension as well. The practicality is that you can do no more good than the public can stand. The level of incentives has to be acceptable to the customers in general.

All programs will be regularly assessed. This is one thing we feel is a significant advantage to the demand side programs. If we are out there trying these and they work, we can accelerate them; if they do not work, we can drop them. It gives us some flexibility in terms of pursuing. We need that flexibility in the kind of environment we are in.

Summary: Maximizing customer value is fundamental. Customers are pleased with our current performance, but we have to get better. There is a diverse customer base, so we have the opportunity to introduce a wide range of programs. We want to be responsive to customer needs and enhance customer services. We see demand management as an integral part of the total corporate planning in this area. The issue of customer equity is really an important one and critical for the input of this committee.

Mr. Chairman: Thank you, Mr. MacCarthy. I note that it is 12:30 p.m. Recognizing that we are going to be discussing these strategic principles again on Monday and most of next week, do the members have any questions relating to the specific presentations this morning?

Mrs. Marland: I have one. On figure 11.1A-2, where you are say the customers generally are pleased with your performance,

under efficiency, you have, "Seventy four per cent residential say Hydro educates." What does that statement mean?

Mr. MacCarthy: We asked whether the customers were aware of the energy education programs we are providing, the information we provide in terms of maybe purchasing a more energy-efficient refrigerator or an Energuide program. Seventy-four per cent indicated they were aware of this program. In the commercial sector, the awareness level was lower than that.

What we are trying to say is that it is fine for us to have these programs, but if nobody is aware we have them, they are not doing much good.

1230

Mrs. Marland: I must say, I guess contrary to Mrs. Grier, we did just buy a new refrigerator and it was my husband who went around opening all of them and reading those very large, very easy-to-read stickers. I think that is an excellent program. There should be a great deal of commendation for that direction and that program in particular.

When you deal with commercial users, and I guess Harbour Castle is a commercial user—

Mr. MacCarthy: Yes, right.

Mrs. Marland: —when you are able to give them advice, that saves them \$450,000, I think you said?

Mr. MacCarthy: Yes.

Mrs. Marland: Do they pay a fee to Hydro for that consultation?

Mr. MacCarthy: No.

Mrs. Marland: The fee, if it were a regular consultant's fee, would be a source of income and revenue for Hydro. I recognize that we all benefit by the reduction of consumption needs, but if it is a private corporation, which a commercial user would be, and if it benefits by reducing its costs, we benefit by the reduction in the overall load demands. But if you are giving your time, as Hydro staff, in that consultation process, would it not be worth considering that you might be entitled to a fee?

Mr. MacCarthy: This is something that we are considering for the future. As we embark on some of the incentive programs, we may be able to come up with a proposal that if, for example, we save you X dollars over the next five years, you are unwilling to make that capital investment of funds, but if you can repay a portion of the incentive that we have offered through the energy savings, then that would reduce our overall costs and our rates to our customers and still meet the

objective of reducing overall demand and reducing costs to that particular customer. It is something we are looking at.

What we do not want to do is discourage the involvement. If we take, for example, the energy monitoring program Mr. Cureatz was talking about the other day and the assistance that we provide it, the concept behind that is to get it started. In fact, we were preaching the gospel beforehand and nobody was taking up the call, so we are putting some money in it. Then we get a few examples like Molson's which is going to wind up saving a few hundred thousand dollars with this energy monitoring system. Then we can take that, advertise it and stop putting up the incentive money and say, "You don't need incentive money, it's a good deal without it, but you need to get started on this."

Mrs. Marland: I commend you for the programs. I think that obviously the philosophy has changed and needed to, but it certainly is a benefit to us all.

I regret that it is 12:30, because I do have more questions. It is a tremendously interesting subject and it is obviously a responsibility that we all share, but I will yield the floor in view of the time.

Mr. Chairman: I would note that we are going to be coming back to these subjects over the next week. Mrs. Marland, you are certainly welcome to sit in and ask any questions at that time.

Mrs. Marland: I would like to do that.

Mr. Chairman: Mr. South, did you have a brief question?

Mr. South: A very brief question. Mr. MacCarthy, 86 per cent of your customers in my riding indicated that they would like stricter legislative controls of Ontario Hydro as a corporation. Will you support that?

Mr. MacCarthy: I am not sure I am the right person to answer that. Mr. Franklin may be back. That might be something you could address to him.

Mr. Chairman: Are there any further questions?

I am afraid, Mr. McConnell, we have not caught up to our schedule. We will have to start again on Monday. Given the time we are taking, I should alert the members to the fact that I think we should probably plan to meet until maybe 5:30 or six o'clock during the next week and add some time to the end of each daily session to allow us to catch up.

Mr. Ray, you asked about that federal report that came out. We have asked that it be shipped out, and I understand we hope to receive it next week. We will distribute copies at that time.

Mr. M. C. Ray: Could I ask that Ontario Hydro review that report? I do not suppose it comes as any surprise to you anyway.

Mr. McConnell: Is this the Kierans commission?

Mr. M. C. Ray: Yes.

Mr. McConnell: Yes, we appeared before the Kierans commission.

Mr. M. C. Ray: Could you give us some comments on that report as they relate to our undertaking here?

Mr. McConnell: I think we would be quite prepared to give comments to the select committee on the Kierans report. If it is acceptable, we would prefer not to be obligated to do that next week.

Mr. Chairman: I think what we should do, Mr. Ray, is see this report and see if it relates closely to what we are dealing with in this round of hearings and then perhaps decide what we are going to do with it, if we may.

I will adjourn the committee meeting until two o'clock next Monday afternoon in this room. I remind the members there is a brief in camera meeting at 1:45 in room 230 just prior to that meeting.

The committee adjourned at 12:36 p.m.

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O'Connor, John, Director, Public Relations

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Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy

Electricity Demand and Supply

First Session, 34th Parliament

Monday, August 8, 1988



Speaker: Honourable Hugh A. Edighoffer
Clerk of the House: Claude L. DesRosiers

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Monday, August 8, 1988

The committee met at 2:13 p.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY (continued)

Mr. Chairman: Given that Mr. McGuigan's furnaces are operating full blast behind us, I am going to leave the air-conditioning on during this afternoon's session, and so I again ask the members to be sure to speak more or less directly into the microphones. If people could speak up a little bit, then I think all those in the room will be able to hear over the noise of the air-conditioner.

Mr. McConnell, I think we are picking up at your subject 11.1B. Is that right?

Mr. McConnell: That is correct.

Mr. Chairman: Just before Mr. McConnell starts, I believe each one of you has been given a photocopy of Energy and Canadians into the 21st Century. This is a summary of that Kierans report document that came out last week. We are expecting full copies, but in the interim you have before you a summary, if you want to look into that.

ONTARIO HYDRO

Mr. McConnell: Last week on Friday we started to discuss the individual strategy statements and you will recall we started here on the set of general strategic principles. Dane MacCarthy talked to you first about customer satisfaction. I will be proceeding now to complete that set. The next subject is reliability. Strategic statement 1.2 reads: "Reliability is paramount."

This afternoon, I would like to review very briefly what we mean by reliability, what it is. I did talk to you last week about how we attempted to arrive at the optimum point. I think Mr. McGuigan pointed out very thoughtfully that sometimes when you interrupt power, it is a little bit more than a nuisance. Of course, there are other times when you interrupt it and it is much more serious.

Then I would like to talk very briefly about the causes of blackouts and brownouts; the planning criteria for reliability; very briefly, about the customers' views towards reliability and, finally, about economic implications.

In terms of the bottom line, when we talk about reliability, we usually mean customer reliability. If you were going to have perfect customer

reliability, that means there would be a continuous flow of electricity to all customers at all times. Not only would it be continuous, but the customers would be getting the amount of electricity they desired. That is the meaning of reliability, the continuous supply of electricity in the amount desired.

When we manage reliability, we normally do not think about what percentage of the time the electricity is there. We usually talk about it in terms of the percentage of the time that it is not there. We measure in terms of unreliability. As an example of measuring unreliability, if you have an interruption or an outage, that is, the electricity fails, that would be measuring unreliability, measuring an interruption or an outage.

Also, I mentioned in the definition that customer reliability means that people get the amount desired. For example, if we leave an industry hooked up to our power system but we come along and tell that industry that it is only going to be permitted to have a certain amount—that is to say, maybe it normally gets five megawatts and we come along and tell it that we are going to ration it to four—then that means it is not getting the amount it desires.

That also is a measure of unreliability, and we normally would refer to that as unserved energy; in other words, what people want but do not get. But it does not have to have a power interruption. An interruption could be due to a local problem in a person's factory or home or it could be due to some problem having to do with the local distribution system.

When we are talking about the bulk electricity system, which has been the subject of this hearing, if we have a major failure of our whole system or if a major part of our system and power is interrupted to thousands and thousands of customers simultaneously, that of course is what is called a blackout.

On the other hand, if we leave power connected to everybody but we come along and ration out or limit the amount of power to thousands of customers at a time, this would be called a brownout. You may or may not remember that we had brownouts after the end of the Second World War. New capacity was not installed during the war, and after the war there

was a rapid increase in the demand for power, so we had to ration the power that was available.

When it comes to measuring, we measure unreliability in terms of the frequency of interruptions, that is, the number of times per year that customers have their power interrupted. We also measure it in terms of the severity of those interruptions. Obviously, an interruption that lasts for a day is much more serious than an interruption that lasts for an hour, which in turn is more serious than an interruption that lasts for a minute.

We also measure unreliability in terms of the unserved energy. In terms of the bulk electricity system, we usually refer to that unserved energy in system minutes. If the whole system was not getting power for one minute, that would be called one system minute. That is another measuring system.

Very often when you are talking about reliability, you have to know the context in which the word is being used. For example, the transmission line may fail, and that means you have an equipment unreliability. Of course, in a well-designed and operated system, the failure of any one component, such as a transmission line or a generating station, should not cause an interruption of power to the customer; but if you have enough components that fail simultaneously, then the customer will be adversely affected. I was not proposing now to talk further about equipment unreliability, but that is a part of the science of running a power system. This presentation is focused on customer reliability.

Last week I introduced the concept to you of customer damage and I will not spend any time on that, except to remind you that we have the question that if you want increasing reliability, it tends to increase the cost of providing the electricity supply. If the reliability gets poor enough, then our customers start to suffer the consequences of those interruptions. What we are looking for is to operate at the optimum, which is a balance between the amount of money we have to spend to make the system more reliable and the cost to society of the electricity being less reliable. That is what we are trying to do, to operate in an optimum way.

If we talk about major system unreliability and we think in terms of a blackout, a blackout will normally come about as a result of what we call an unstable system. I think everybody is aware that electricity travels very fast, some 186,000 miles a second, and if we have allowed ourselves to operate with an unstable system and we get one fault, whether it be a human error or an

equipment error, we can bring the whole thing down like a house of cards in a split second. That will result in a blackout, where nobody is getting any power.

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That basically is not the major issue that is before this committee. We are talking more about the adequacy of generation or the adequacy of the alternatives to generation. So we are talking more about the concern about future brownouts and there of course we are talking about a combination of inadequate generation and/or inadequate transmission that collectively, together with the demands of the day, bring about a shortage and therefore require us to ration power.

We are in a situation where, as I say, if you have an interruption of a minute, that is not too serious; but it is as you move to hours, days and weeks. Of course, because generating stations and options to generation can take many years, if we do find ourselves into a serious problem where it takes years to get out of it, this would have an extremely colossal effect on the economy because you would literally have to restrain the whole economy of the province if you ended up with a shortage that lasted a long period.

You do have the advantage of depending on your neighbours, particularly what we call north-south diversity, where we peak in the winter and the Americans peak in the summer. We take those things into account in terms of our planning, but at the same time it is not unusual that if one utility runs short, there is a tendency for all the neighbours to be running short in a similar period of time because we all tend to go up and down with the same economy.

In terms of a planning criterion and in terms of the graph that I just showed you a minute ago, we really are not wanting to try to achieve perfect reliability. It is not optimum and it is not expected that we arrive at it by this technique that I described of analysing the customer damages.

The criterion that we have come up with as an optimum is 25 system minutes per annum. That does not mean to say that we would expect that we would have the 25 system minutes of unserved energy each and every year. In fact, what we would expect is that in most years it would be zero. But if you got caught every 10th year and you had 250 system minutes, that would correspond to this criterion.

But in any event, when people are talking about doing planning having to do with generation adequacy, you normally do not think of having these big shortages more than once every

two to five decades. So you are really looking for something that you would expect to happen relatively infrequently.

You hear a lot about the term "reserve" or "per cent reserve." Per cent reserve is not our system planning specification and it is not our criterion. But what we can do is analyse the power system we are planning and we can translate this 25 system minutes into what we call a typical reserve.

The typical reserve that would correspond to this 25 system minutes would be in the region of 20 per cent to 25 per cent. The definition of "reserve" is where you take the planned capacity and you subtract from that the forecast firm load and you divide that by the load. That is what we would mean by per cent reserve: capacity minus load divided by load. In other words, if you had a 25 per cent reserve, that would mean to say that the capacity would be 25 per cent higher than the forecast firm load.

Mr. McGuigan: Is it 25 per cent over the peak?

Mr. McConnell: Yes, 25 per cent over the peak. That is right.

That reserve is needed for a combination of things. It is intended to deal, in part, with the uncertainty of what the load will be. In other words, if this is the forecast firm load, the actual load may be higher than that. If that is the case, your reserve helps you to accommodate a bit of your underestimate of the load.

Of course, hardware in our power system does not work perfectly. Typically, a good power plant for which we have the most experience in the world, which is a coal-fired power plant, is capable of running about 75 per cent of the time. So good power plants are down 25 per cent of the time. That is good coal-fired plants.

In the case of hydro, hydro power plants have the advantage that the equipment tends to be more reliable. It is not unusual that as far as equipment is concerned, a hydroelectric plant would be down only about eight per cent of the time for maintenance. However, nature does not provide as much water as we would like, so the capability of the hydroelectric plant that we have, counting the availability of water and counting the availability of the equipment, would be typically in the 60-some per cent range.

A coal-fired plant, on the average, will produce more energy than a hydroelectric one will, because there is not enough water to run the hydroelectric turbines in our system all the time.

Mr. Cureatz: Does that go back to the reason you need the 25 per cent cushion? This is what you are—

Mr. McConnell: I am really giving you a series of reasons. The first reason was the uncertainty of load forecast. The second reason is that we do not have 100 per cent capability, and I was citing reasons why we do not have 100 per cent capability. The incapability can either be there because equipment has failed or it can be there because there just is not enough fuel, if you wish, or water.

Mr. Richmond: Purchases are external to that definition of reserve?

Mr. McConnell: If we make a purchase, that purchase would be part of that planned capacity. We take into account the kind of purchase that we make in determining what per cent reserve we would go for.

For example, if we buy capacity that already has reserve in it, that is, if we bought some power out of the Manitoba system in which they guarantee to deliver us 200 megawatts out of their system and they were providing the reserve to go with that, we would treat that differently than if we bought 200 megawatts and we were buying it out of a specific generating station. Then we would be taking the risk that was associated with the reliability of that power plant.

Mr. Cureatz: Some would say 25 per cent is a little high. Are you convincing us that, for these various reasons, we need the 25 per cent reserve?

Mr. McConnell: I would say that the range of 20 to 25 per cent is totally normal. That is to say, Ontario Hydro's requirement is not out of alignment with the rest of North America and that is the same range you would get the rest of North America in.

I do not know what you might have been reading, but in the North American Electric Reliability Council we have been encouraging that the world change the definition and abandon the expression "reserve" and go to what we call capacity margin. In that particular case, that is the amount of reserve divided by the capacity. You would expect then that the number would be more like 18 per cent.

The reason NERC has recommended that switch is because airplanes, hotels and most industries express themselves in the normal way by asking, "What percentage of the capacity is not being used?" If you are talking about, say, an airplane, it is what percentage of the seats in the airplane did not get occupied. If you were talking about a hotel, it is what percentage of the rooms were not occupied. If we were talking in that language of capacity margin, we would be talking more like 17 or 18 per cent there.

At any rate, just talking for a moment about—

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Mr. South: Excuse me, did you discuss reliability of nuclear?

Mr. McConnell: No, I was talking about the reliability to the customer. I was saying that I was not proposing today to talk about the components, but I did cite coal-fired plant as having 75 per cent. We would expect that the nuclear would be the most reliable, about 80 per cent.

Mr. South: Has that been your actual experience?

Mr. McConnell: That is right. The nuclear tends to be close to 80; the coal-fired in our case tends to run between 72 and 75, and the hydraulic, when you consider the water availability, tends to run in the 60s. We expect that the hydro in the future will go below 50; we will be talking to you about that later. We are talking about developing the remaining hydraulic in Ontario, which will typically only have about 25 per cent capability because of the limited water.

In terms of what the customers' views are towards reliability, we talked about this last week. We did in fact have a lot of interviews with all kinds of customers. We talked to residential customers, we talked to our industrial customers and we talked to our commercial customers. We were not surprised, of course, when the industrials came on extremely strong and aggressively in terms of how important it was, and we were not surprised when the commercial people did likewise. But it is interesting just how aggressive people in their homes are in saying that reliability is damned important and they just do not want it to be buggered up. So the view came on pretty strong with all customers and all customers said without question, "We want low-cost power but we are willing to pay a little bit extra to make sure it's reliable."

In terms of industry, of course, I really need not say very much here because I think Mrs. Sullivan talked about this last week in terms of the industrial customers in her riding. Of course, industry views reliability of power as very important. If an industry were, say, very electricity intensive, then let's suppose the cost of the product was 20 per cent electricity. You can see it is extremely important that we have a very low cost to that industry if it is 20 per cent of the final cost. Of course, if they are relying that heavily on electricity, it is even more crucial that the power supply be there.

Most industries in Ontario are not in the category of 20 per cent of their product being electricity. It is not unusual that it would range more in the region of one to eight per cent, maybe

typically three to five. At the same time, we can drive the cost of their product up if the reliability is not there because there are very few factories that do not come to a screaming halt when you interrupt their power supply. Virtually every industry that exists depends upon a continuity of electricity; brownouts and so on would be very disruptive in our society.

When industry decides whether it is going to locate in Ontario, it has to make a judgement in advance about whether it can depend upon the power supply in the future, so having a track record in the past helps to attract and retain industry in the future. We do have a good reputation in Ontario for reliability and the name of the game is to maintain that. In order to make sure that that reliability is maintained, there is a necessity to develop and commit appropriate demand options and supply options on a timely basis.

That completes my remarks on reliability and if it is acceptable I would like just to continue on with some of the other criteria here, or would you rather stop?

Mr. Chairman: I am just wondering if there are any questions of clarification that any of the members would like to ask right now.

Mr. Runciman: You are talking about capacity margin, 18 per cent if you use that kind of formula. When you reach those calculations, does that suggest, sort of simplifying this for me, that you have a load forecast, X megawatts?

Mr. McConnell: Yes.

Mr. Runciman: When you are looking at capacity margin, do you take a look at all of your production facilities and say, based on 100 per cent production rates it will produce X megawatts?

Mr. McConnell: That is right. When you are looking at the capacity margin, you just assume that everything is perfect and you calculate your per cent margin. In reality, of course, everything is not perfect and that is where the margin comes in.

Mr. Runciman: Yes, but the margin that you are operating on, whether it is the capacity margin or the other formula, you are using the production figure with all your plants operating at 100 per cent capacity?

Mr. McConnell: Only in defining the margin.

Mr. Runciman: So the real margin is significantly lower?

Mr. McConnell: You want the real margin not to get less than zero, like last week.

Mr. Runciman: So what you are saying in effect is that you really do not have a margin.

Mr. McConnell: Let us suppose, for example, that you had a reserve margin of 22 per cent in planning. If in practice you got down to the point where you had 15 per cent, you would say, "I have no surplus." You would be saying you are seven per cent short. In other words, whether you have a surplus or not is relative to the margin you want to have.

Mr. Runciman: I am just wondering why you would not use an average production figure. If your plants for the past three or four years operated at an average of 60 per cent or 70 per cent, why do you not use that production figure when you are reaching these calculations rather than some figure that you rarely if ever reach?

Mr. McConnell: In calculating the reserve requirement, the determination is much more complex than just looking at the capability of a plant. For example, in looking at the capability of the plant, that would include planned outages. When we are trying to meet our winter peak, we will not deliberately plan outages to take place during that particular period. So we will focus more on a criterion at that winter peak, which is called the forced outage rate. So the thing is a lot more complicated than I am presenting to you, but you cannot just go simply from the capability that I mentioned to the amount of reserve that you need.

Mr. Runciman: It sounds pretty complicated the way you are presenting it to me.

Mr. McConnell: It is very complicated, that is right. But I just wanted you to understand the spirit, that the plant is not perfect and that you have to have some reserve to accommodate the fact that the equipment is not perfect.

Mr. Runciman: I appreciate that. What is your track record with respect to your load forecasts over the past 10 years?

Mr. McConnell: In the 1970s, our forecasts were God-awful. The actual loads in 1983 were much below the forecast we made in 1973. The forecasts that we made in 1983 were too low. In other words, we were on the wrong side in the other direction. So the actuals in 1988 are much bigger than the forecast we made in 1983.

We will be talking to you, I think tomorrow, about band-width forecasting and we will be showing to you the band width that we are forecasting, which is more meaningful than a single number. We really do not plan to a single number, we plan to a band.

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Mr. Chairman: I wonder if at this point we can confine questions to points of clarification, and then when all these general principles have been laid out, we can get into more general discussion. Mr. McGuigan, did you have a point of clarification?

Mr. McGuigan: First of all, I wanted to give Mr. McConnell some consolation from Samuel Langhorne Clemens. He says it is quite all right to make forecasts, as long as you do not do it about the future.

I want to question the 20 per cent to 25 per cent reserve. Has that changed? It once was 25 per cent rather than 20 to 25.

Mr. McConnell: We have really worked with the criterion of 25 system minutes for quite a long time.

Mr. McGuigan: No, I meant the 25 per cent. You are saying 20 per cent to 25 per cent.

Mr. McConnell: We calculate that every year as to what the needs are in order to have the customer reliability that we are talking about.

Mr. McGuigan: In my mind, you are narrowing that a little from what it used to be. It used to be a firm 25 per cent, and now you are saying 20 per cent to 25 per cent. Is that correct?

Mr. McConnell: If we did it that way, we made a mistake. We should never have used a rigid number.

Mr. McGuigan: So it is possible there is a slight change. I have other questions, but not of clarification.

Mr. Chairman: We will have a general discussion afterwards. Mr. Charlton, do you have something to clarify?

Mr. Charlton: Just a very brief question in terms of what you were telling us about the fact that plants do not operate 100 per cent of the time. You quoted some figures, I think 75 per cent in the case of coal and 92 per cent in the case of hydraulic, except that fuel shortages cut that back to about 60 per cent.

Mr. McConnell: That would be a typical number, yes.

Mr. Charlton: Can you give us an idea, so that maybe we can have a better perspective on outages, what percentage of your plant outages would be planned as opposed to unplanned, i.e., planned maintenance at a certain period each year for a certain plant? How often does it happen when it is supposed to happen and how often are you struck with situations that are unplanned and therefore somewhat more difficult to deal with?

Mr. McConnell: I would say that we can typically—and I say that word with great caution—be able to plan about 75 per cent of the outages. But there is a great deal of variation from that typical.

Mr. Charlton: An unplanned outage in winter or summer would be more critical to the reliability question than, say, an unplanned outage in April.

Mr. McConnell: You have asked an extremely complicated question. Basically, we are trying to level the risk all year round. So if we take enough planned outages in the summertime, we have ourselves to the point where the probability of there being a power shortage is equal to the probability at the time of the winter peak when we minimize the outage. What we are trying to do is flatten the risk all year round. When you start to flatten the risk all year round, then you become vulnerable all year round. On the other hand, you spend less money on your system. I do not know whether that answers your question or not.

Mr. Charlton: It gives me a better perspective, yes.

Mr. Chairman: Mr. Argue, did you have a question?

Mr. Argue: I going to pass until the general discussion.

Mr. McConnell: I would like now to proceed with presentation 11.1D, which is social and environmental. That deals with strategic principle 1.4. Strategic principle 1.4 reads as follows: "Ontario Hydro must ensure that its activities are conducted in an environmentally and socially acceptable manner."

People may not wish to quarrel with that and immediately call it motherhood, but what I would like to do to put some flesh on the bones is to talk about the word "environment" and then talk about other social things, such as wise use, diversity, public safety, debt, jobs, economy, lifestyle and indigenous resources.

First of all, taking the issue of environmental protection, I think probably everybody here is quite aware that, as far as options are concerned, whether they be demand options or whether they be supply options, nothing is benign. It does not matter what you do; it is going to have some impact on the environment. For those of you who have travelled abroad and have been to countries like India, Nigeria and so on, countries that have very little energy, it is really quite frightful to see what the consequence is of trying to live with so little energy.

Taking those two things into account, the fact that no energy is benign clearly is a part of the problem having to do with environmental protection, but on the other hand, energy is also a part of the solution to being able to manage the environment. We have here in Ontario an expectation that Ontario Hydro is going to behave responsibly, and so it is a part of the challenge to us to accept that responsibility and deal responsibly with environmental protection.

Now, in terms of laws that are created at the federal level and the provincial level, it is quite clear that Ontario Hydro has no business except to conform rigorously to those laws, but at the same time, to show leadership, we do not have to wait until a constraint is imposed upon us. Quite clearly today, on acid gas, the acid gas limits as they have been issued by the Ministry of the Environment are constraining Ontario Hydro. But prior to 1987, when they were not constraining us, we had in fact taken leadership action, and about 50 per cent of the reduction that has been achieved since 1977 and will have been achieved by 1998 will have been achieved through voluntary action on the part of Ontario Hydro and 50 per cent will have been achieved through constraints that were issued by the government.

That is just an example of the past. There are new requirements that we expect will emerge through legislation. For example, the Ministry of the Environment has new requirements that are being developed now that, if they were in fact adopted, would be a further requirement that we would have to satisfy. At the same time, new requirements are emerging that are not coming through legislation. I am sure that people have heard about the greenhouse effect, and this has to do with concerns about CO². Of course, Ontario Hydro is out in front and is working on the implications having to do with CO², and we are putting together data in terms of what implications that kind of effect would have for us.

I think people here are aware of many topical issues that we have to deal with, such as polychlorinated biphenyls, radioactive wastes and so on, and the bottom line, as we reported to you last week, is that when we went out and talked to the people in this province, they said: "Yes, we do want low-cost power, but we are prepared to pay something extra to have it environmentally acceptable."

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I do not think I will spend much time this afternoon on the question of wise use, because Hedley Palmer and Dane MacCarthy have both

addressed this. I would simply remind you that this is also, of course, a social issue that, quite independent of our desire to have this substitute as much as possible for generation, is also one of the public's values. People want us to be in an active role promoting wise use of electricity, and this includes both reductions for efficiency and our helping this province in terms of electrotechnology so that we will be more competitive.

One subject we have not talked to you about up until now is the subject of resource diversity. There are some numbers missing off this slide here. I will give you those in a moment. They are also missing in the paper we handed out to you, so you can fill in the missing numbers.

Resource diversity means having electricity generated from a number of different primary resources, in other words, more than one. If you had everything generated from one form, you would have zero diversity. Maximum diversity is where you have a large number of primary sources and they would all be contributing a little bit.

When we went out and talked to the public on that subject, people indicated they were in favour of resource diversity; in other words, do not depend on one thing too much or, as some people prefer to put it, don't put all your eggs in one basket.

Going back to 1950, we had no diversity at all, we were all hydro, but the public found that acceptable and that risk was accepted. There was not a large concern about our being totally dependent upon hydro. It had these other advantages of being low cost, indigenous to Ontario, renewable and reliable in so far as equipment was concerned.

Today, in 1988—you can fill in the missing numbers here now—we have a high diversity. We do not depend on one source. It is estimated that when the year is over, hydro will be about 22.7 per cent. When the year is over for coal, we expect 31.8 per cent; oil, 8.7 per cent, and nuclear, 36.8 per cent. The numbers I just gave you are not for energy, they are for capacity, because it is really the capacity that is more critical in terms of diversity, not the energy.

We have what we call a well-balanced system at the moment, but just as in 1950, where there had to be tradeoffs made between the fact that people were prepared to accept 100 per cent hydraulic and were prepared to have no diversity because of the advantages hydraulic offered, in the future we have to continue to balance that desire for diversity against the desire that we have a low-cost power supply. That becomes an

ongoing question: How do you make those tradeoffs? As I said, the key there is capacity, not energy, in terms of your diversity.

If you want to be even more pointed, because the nuclear cost is low relative to many of the other options, there is a practical question: Should diversity be an issue on limiting the nuclear commitments in the future? As a matter of history, in the 1970s Ontario Hydro's policy was to limit the capacity expansion to two thirds nuclear. That got us up to this position of 37 per cent today. It would take a long time with that policy to get up to 50 per cent.

Going on to public safety, that is another key value of the public. In so far as concern is concerned, I think it is fair to say that, in terms of anxiety, nuclear is the largest concern the public has. As people here know, we had the Hare commission review as a result of the recommendations that were made by the select committee of 1986. I think your people are aware that the Hare commission endorsed the general practices that are presently being used, but did make some specific recommendations which are presently being acted upon.

In terms of bottom line, our public safety record in Ontario Hydro, with regard to hydro, with regard to fossil and with regard to nuclear, has all been good. Of those three, where hydro has had a good record, it has been the less safe of the three over the period of this century.

Mrs. Grier: Can you expand on that?

Mr. Cureatz: What is the less safe?

Mr. McConnell: During the course of this century, there have been some dozens of people killed by hydraulic, mostly people violating things like deciding to fish in one of our intakes and so on. Most of them have been drowned in the waterworks that we have created. But there has not been too big an outcry on the part of the public because I guess the question of the value is how much of it was Ontario Hydro's fault. We get pretty excited about anything in which we have been a part of the cause. For example, on transmission, if a child should climb one of our towers and be killed, we feel totally accountable for that kind of accident. The majority of our public fatalities have had to do with transmission and hydraulic generation. They are the most difficult to manage, those two.

I see Mr. Runciman is gone. He was asking a lot of questions about debt. I am sorry he has disappeared. I wanted to assure you, Mr. Chairman, regarding the questions you asked last week, we have gone over Hansard and we are preparing replies to all of those. For all the

questions you asked last week, we hope to have delivered the answers back to the committee by Friday of this week. Similarly, for any questions that are asked this week, we would like to have answers back next week.

In spite of Mr. Runciman's absence, in talking about debt, there is a concern on the part of the public about debt. There has never been a year in our history that the public has not expressed a concern about debt: in other words: "The debt is too high. We do not like it." We expect that five years from now, 10 years from now and 15 years from now the public will still be expressing concerns about debt. That is a fact. It is concerned.

In dealing with this, the first thing I would like to emphasize is that when we talk about Hydro debt, we are not talking about Hydro being subsidized. There is no subsidy involved at all. Our revenues cover the costs. There is no deficit. We do not have a situation in which we are collecting revenue that is less than our costs each year. So we do not have a subsidy and we do not have a deficit.

If we were a private utility, the shareholders would have put up money. Then that would help to finance the capital works. When the product of that company was sold, if it were electricity, there would be a return on investment to those shareholders. They would get more than their interest on that if they had made a good investment.

When you look upon the debt we have, it is really debt financing. The way we finance capital projects is by issuing bonds, and that is what debt means. It is debt financing. It is very ordinary to any public organization to finance capital through the issue of bonds. Those capital plants obviously cannot be doing any good for you while they are being constructed. If they are doing good for you for 40 years, you simply charge the customer a charge for each of those 40 years to pay back the initial value of that bond and the interest on it.

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To give you an idea of the investment in the assets that we have, the current debt we have is about \$25 billion, which is an awful lot of money, and the value of the assets that we have is about \$45 billion. Again, if you went out and bought a home for \$100,000 and you owed \$60,000 on that \$100,000 home, you are pretty well off because you have \$40,000 worth of equity in it. It is the same thing here. Our customers have a lot of equity in us.

Mrs. Grieg: Is that including Darlington?

Mr. McConnell: No. This is the situation up to now. Darlington has still not been declared in service, so the interest is accumulating on that investment while Darlington is being built. When it is declared in service, the debt will increase. In the interim period, of course, it will have gone down somewhat too. There will be minuses and pluses, but that would increase the amount of the debt and it would also increase the value of the assets.

Mr. McGuigan: For clarification there, Darlington does not show at all in there, on either side.

Mr. McConnell: No. Darlington does not show on either side. That is right.

Mr. Cureatz: I am just wondering about some of these assets where a plant—say, it is Rolphton; I know it is a small plant, but say a large nuclear plant—becomes not in service. Is there a huge decrease in current assets?

Mr. McConnell: No, because the value of the assets is written off as the plant is written off.

Mr. Cureatz: OK.

Mr. McConnell: The book value of the assets tends to be in alignment with the current debt. Well, it is a little higher. When you talk about the value of the current assets, with inflation these plants tend to be worth more.

So we have this problem. We have this genuine concern on the part of the public. At the same time, the reason electricity in Ontario is relatively low compared with the rest of the world has been our building high-capital-cost, low-fuelling-cost plants, basically both. There is a bit of a conflict there between the desire on the part of the public not to have debt and, at the same time, a desire on the part of the public to have low-cost electricity. It is this high-capital-cost plant that has served Ontario well.

When we introduce electrical efficiency incentives, as we are now, it is not crystal clear just exactly how these will be treated, but I think we will be writing those off over time probably. In that case, we are going to have a situation where we have debt without assets, because the equipment is going to be owned by the customers. Nevertheless, we are still saying that is the right thing to do. If you have contrary views, we would like to hear them.

In terms of equity, if you went out and tried to retire all your debt instantly, you would be unfair to all your current customers. You would be penalizing all the consumers of electricity now and you would be penalizing industry in Ontario

if you tried to write off your debt too fast. That would be unfair.

In terms of our credit rating, our debt is no problem to us at the moment. It is perfectly in alignment where our debt ratio is quite favourable compared with other organizations and our credit rating is OK. Debt is not an issue in that context.

In terms of jobs and economy, this is another value that the public holds. We did not identify it in Art Marriage's presentation as a primary criterion. We identified such things as low cost and reliability. Of course, we consider environmental protection not only as a primary criterion but a mandatory criterion that we do a good job, but in the case of jobs and economy, we look upon this as a secondary criterion. You will find in our strategy that, other things being equal, we favour it.

The question is, of course, how much? This gives you a little bit of an idea in this tabulation. These are not rigid numbers. They are intended to be typical lifetime representations of these different options where you can see that demand management enjoys a high Ontario content and high Canadian content. Hydro enjoys a high Ontario content and a high Canadian content. Nuclear enjoys a high Ontario content and a high Canadian content, with coal being a high Canadian content in the case of western Canada and a high US content where we buy the coal from the United States. This is all worked out on the basis of jobs, as to where the jobs are.

Moving on to lifestyle, I do not think I will spend much time on this because we made a presentation to you on Friday on this when we went over the public surveys; but I think we did indicate that we have a high expectation on the part of Ontario residents where they basically want to maintain the good life.

To go on to indigenous resources, the public favours the use of indigenous resources for several reasons. Indigenous resources contribute to price security. That is to say, if you are getting your fuels or something else from outside Canada, you are vulnerable to what happens to the price in the future, particularly if you are depending on oil from the Middle East.

Supply security is a little different to price security, although it is interrelated, and that is the question of whether you have it or you do not have it. Indigenous resources, as we were talking about a minute ago, tend to mean that you are providing jobs at home. If you are using indigenous resources, it tends to boost your own economy. We will be talking about this later in

another specific presentation that we are making on the question of preferences for resources.

The reality is that when you come back to this business of saying Ontario Hydro must ensure that its activities are conducted in an environmentally and socially acceptable manner, one of the most difficult questions is how do you make those judgements. You say that these are things society wants. How do you make the tradeoffs between those social values that have been expressed and the question of just trying to minimize your costs? Again, we will be coming back to that later and talking a little about it, but it is a very difficult issue.

The next presentation, and the last one in this set of general strategic principles, is "Power at Cost." Dane MacCarthy is going to present that. I do not know whether you want to pause here or not.

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Mr. Chairman: Just one clarification: Did we cover the item called "Customer Cost"?

Mr. MacCarthy: No, I do not think it was covered.

Mr. McConnell: Did I miss that? I started in the wrong place, I guess. I missed it. Sorry about that. Somebody sent me up a note here; now I understand it. Thank you.

Mr. Chairman: Why do we not pause for a moment to see if there is any clarification, though, on this issue of social and environmental costs?

Mr. Charlton: Two quick clarifications: The first one is that you said you were going to give the system percentages.

Mr. McConnell: I read those off pretty fast, yes.

Mr. Charlton: You read one and did not give us the rest.

Mr. McConnell: Did I not give them? Sorry about that.

Mr. Grier: He did read them out.

Mr. Charlton: He did?

Mrs. Grier: Yes, but the only one I got was the last one.

Mr. McConnell: Did you want me to read those out again?

Mr. Charlton: Yes, just quickly.

Mr. McConnell: Hydro, 22.7 per cent; coal, 31.8 per cent; oil, 8.7 per cent, and nuclear, 36.8 per cent. That is on the basis of capacity, not energy.

Mr. Charlton: The other clarification is just a brief question on figure 11.1D-7, typical lifetime job percentage. Am I correct, when I look at this and take from what you have said, that this is a reflection of where the jobs occur and not necessarily the numbers of jobs per dollars?

Mr. McConnell: This would take into account the numbers of jobs where they occur. In other words, if you took the lifetime of, say, a power plant that was going to burn western Canada coal, this would include where the jobs are during the construction and the manufacturing, and during the operation and the maintenance, and to fuel that plant. So it counts everything.

Mr. Charlton: Yes, I understand it counts everything and this represents a percentage of the total jobs that would be associated with that technology over its lifetime. My question, though, is on the 90 per cent that you have under demand management for Ontario content for jobs, for example, and the 93 per cent you have under nuclear. To the average person, that would indicate that per dollar spent over the lifetime, you would get approximately the same number of jobs in Ontario. I do not think that is quite correct, is it?

Mr. McConnell: That is right. Yes, I think you would get as many jobs in Ontario on the demand management.

Mr. Charlton: There are some studies I have seen that say you are going to get more. That is what I wondered about.

Mr. McConnell: Oh. Basically, I cannot differentiate between 90 and 93 per cent.

Mr. Charlton: No, but what I am saying is that the percentage is a percentage of the total jobs associated with that technology, but it does not necessarily mean that for demand management you get the same number of jobs per dollar spent as you get for nuclear. One is less capital intensive, more labour intensive; the other is less labour intensive than capital intensive.

Mr. McConnell: There is a lot of capital in demand management. For example, if you decide you are going to take out a 30-watt light bulb that cost you 50 cents and put in a 30-watt light bulb that costs you \$12, there is a lot of capital in manufacturing that \$12 light bulb, and it may or may not all be spent in Ontario.

If you decide that you have an electric motor that is running out there driving a General Motors plant right now and you are going to build a new motor and take out the old one and scrap it, that is

a capital construction to build that new, more efficient motor.

Mr. Charlton: Yes, but there are jobs in the construction of the motor.

Mr. McConnell: There are jobs in the manufacturing of that motor, and the majority of those jobs in manufacturing that motor would be in Ontario.

This is just intended to be a typical value. We are not claiming that for every new component that is built according to demand management replacement, that would be entirely 100 per cent built in Ontario. These are intended just to be typical.

The value, of course, or the lifetime of different options could be different times. For example, if you built a more efficient refrigerator, you would not expect it to run for 40 years. That is taken into account, as well.

Mr. Charlton: I try hard, though.

Mr. McConnell: You try hard.

Mr. McGuigan: I would like just a short answer. I do not like limiting you, but it is a matter of the time. You said at the very beginning that the US peaks in the summer and we tend to peak in the winter. In light of what happened the other day, and in light of the fact that we are moving to more and more air conditioning for efficiency of people and efficiency of machines, is not this whole thing called into question?

Mr. McConnell: Typically, the ratio of the summer peak to the winter peak in most years would fall between 0.80 and 0.85. Is that right, Hedley?

Mr. Palmer: I think that is pretty close.

Mr. McConnell: This summer is a very unusual summer. I am not sure whether we have had this kind of sustained heat in this century before; does anyone know?

Mr. McGuigan: This is the hottest so far.

Mr. McConnell: I would think this is probably just about the hottest run we have had during this century. If it ended up that it ran closer to 0.88 or something like that this year, I would not be surprised. I do not know what the number is at the moment because the year is not over yet.

Mr. McGuigan: On environmental, we used 8.7 per cent oil.

Mr. McConnell: We did not use 8.7 per cent oil. We have a capacity that corresponds to 8.7 per cent. If we had a coal strike, we could start to burn oil. If we have an oil shortage, we can start

to burn coal. That is where the diversity comes in.

Mr. McGuigan: I am assuming the type of oil we would burn would be very low grade byproduct of the oil industry.

Mr. McConnell: That is correct.

Mr. McGuigan: By using that, in a sense, we are helping the environment rather than hurting it. It is a product somebody is going to use; it is a product that has to be disposed of. We are not competing with the light crude oil that you would use for other purposes.

Mr. McConnell: That is right. We are not burning the premium fraction of the crude oil that is used for making gasolines and plastics and that sort of thing. We are dealing with the residual oil.

Mr. McGuigan: Where you use the term "current assets," are you talking about replacement value?

Mr. McConnell: Yes.

Mr. McGuigan: Because no one could say what a tower is worth, whether it is a new tower or an old tower; it has no market value. We are talking about replacement cost.

Mr. McConnell: That is correct.

Mr. South: In regard to debt, do you know the percentage of the \$25-billion debt that is Canadian as opposed to foreign?

Mr. McConnell: I do not have that number in my head, but I can get it for you. I would think it would be probably in the vicinity of 70 per cent plus. We will get that number for you.

Mr. South: Mr. Runciman says it is \$15 billion Canadian and \$10 billion foreign.

Mr. McConnell: That is 66 2/3. That is not far off my 70 per cent. We will get that number for you.

I was regretting, Mr. Runciman, that while I was talking about debt, you had left the room.

Mr. Runciman: That was good timing on somebody's part. In any event, we will have an opportunity to pursue it later, I hope.

Mrs. Grier: Under your strategic principle that Ontario Hydro must ensure its activities are conducted in an environmentally and socially acceptable manner, and you list a number of topics which you then comment on, how do you decide what weight to give each of those topics when you get down to making a tradeoff?

Mr. McConnell: On page 19, I said, "One of the most difficult questions is making the tradeoffs of these criteria as compared with low cost." When we appeared before the 1986 select

committee and asked that question as to whether certain preferences would be quantified, we were met with a resounding silence.

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Mrs. Grier: Diversity is not an issue for you?

Mr. McConnell: Yes, it is.

Mrs. Grier: I see, but you then have to make those tradeoffs, so you must be forced even within the resounding silence to make your decisions. I was wondering how you do it.

Mr. McConnell: We cannot be silent. We ultimately have to speak up and make a recommendation. What you are asking is an extremely vital and an extremely critical question. The proposal we are making is that when we come forward with a definitive plan mid-next year, we will set out for all of the options what the costs are, and we will meet the reliability criterion that we talked about.

When it comes to these social question marks that you just asked about, we will quantify those as much as we can, even though we cannot convert them into dollars. In other words, if you said, "This option has a certain percentage of its jobs in Ontario, a certain percentage in Canada and a certain percentage in the US," we would put the data forward in our evaluation.

When we make the recommendation, we make a judgement based upon the commentary that we have. But we do not have any quantitative way of going from those value judgements of society into tradeoffs with cost.

On the other hand, I would have to acknowledge that we had long debates about this as to whether, for example, we would put a percentage preference, say for indigenous. Suppose we said, "We are going to give a five per cent preference if it is indigenous" or "We are going to give a five per cent preference if it is renewable."

Not only did we have silence on this from the select committee of 1986, but the senior management of Ontario Hydro joined with the select committee and said: "No. We think, in fact, that we should put these things forward as a matter of information." In other words, we make a judgement at the time, we submit our recommendations and let the judge who receives this information agree or disagree.

That is not a very good answer to your question.

Mrs. Grier: I sympathize with the dilemma. I suppose ultimately that is the question of where the buck stops. The government is going to have to make those choices.

Mr. McConnell: Right.

Mrs. Grier: But it would seem to me that if in the way you are going to put them forward, you are going to be quantifying them, then it is important for us at least to try to understand the assumptions that you make when you do even as much quantification as you can.

Mr. McConnell: I agree.

Mrs. Grier: So I am wondering what you can tell me as to how you are going to arrive at that quantification. Just looking at the one that Mr. Charlton commented on, jobs and the economy, you began to describe your determination of the Ontario content of the demand management option. It seemed to me there was almost as much uncertainty and assumption-making having to go into that as there is in load forecasting.

Mr. McConnell: I think that is fair enough. I think that with the other four things—hydro, western Canada, US coal and nuclear—we have a fairly high confidence in the meaning of those numbers. In the case of demand management, that is our best judgement at the moment, that it is going to fall into that category of 80 to 100. It is typified there as 90 and I think it is probably in the right ball park. Basically, we are saying high Ontario content, high Canadian content. That is the bottom line.

But if you are saying in some instances it could be 60 or 50, I would think in some instances of individual applications it could be that small, but we would expect to be encouraging a lot of Ontario content across the board.

Mrs. Grier: I guess what is coming to me is my worry that while you are not going to make a firm recommendation on your preferences within these environmental and social value judgements, the very act of beginning to quantify them in fact influences the value judgement of the person who ultimately makes it.

Mr. McConnell: I agree.

Mrs. Grier: I am wondering, if you are not going to make the final recommendation, perhaps ought somebody else not do the quantification?

Mr. McConnell: It is our intention to do the evaluation and make the recommendation.

Mrs. Grier: So you will ultimately make a decision as to the weighting to give these topics?

Mr. McConnell: We will make an evaluation, we will make a recommendation and we will provide all the data. We will provide the cost data. We will provide the other data so that whoever we are making the recommendation to

has the whole thing. They have our judgements. We have to stand and be counted and that can be accepted or rejected.

Mrs. Grier: You made the point about diversity having entered into the system post-hydraulic; that it was all hydraulic in the 1950s and everybody was quite happy with the fact there was no diversity. I am wondering what governs the need for diversity. Is it the risk entailed in the other options? Why has diversity become such a significant element in your decision-making?

Mr. McConnell: What I was really covering here is the values of the public whom we serve. It was the public that was telling us, "We want diversity."

Mrs. Grier: So if Hydro had its druthers, diversity is not an issue for you?

Mr. McConnell: Yes, it is. It always has been and will continue to be.

Mr. Charlton: If you had the resources of Hydro-Québec, would that still be true?

Mr. McConnell: If we had the resources of Hydro-Québec and they were low-enough cost, I think we would probably be saying, "In the interests of low costs, let us stay all-hydro." As I see it here, if you have a very, very small margin in cost between two options, you are going to be more compelled to go for diversity, but if you have a big difference and you want to keep this province competitive, then, of course, you are going to push more to go for low cost than you are for diversity, so it is a tradeoff, a judgement again. It comes back to balancing what are the benefits of each thing; what are the benefits of diversity and what are the benefits of low cost.

Mrs. Sullivan: I had a couple of questions, some of them relating to the tradeoffs, which I think have been covered, but others relating to debt. One of the questions that I wondered about is what relationship did the valuation of the current assets have to the replacement value of those assets?

Mr. McConnell: That is the replacement value.

Mrs. Sullivan: The second thing is what would be the rationalization for capitalizing the efficiency incentive programs? Why not simply have those as part of the operating cash flow and charge them back as part of rate?

Mr. McConnell: I am sorry, I did not understand the question.

Mrs. Sullivan: What would be the rationale for capitalizing the efficiency incentives?

Mr. McConnell: I will pass that question over to these two gentlemen down at the end. They are better qualified to answer that.

Mr. Palmer: I think point one is the magnitude of it. If it is added into the rate base year by year, over a short period of time it raises the rates very substantially, and the benefits—

Mrs. Sullivan: Have you any idea of what that would be?

Mr. Palmer: Suppose that it costs a couple of billion dollars to secure 2,000 megawatts of demand management over a period of 12 years. Divide that number by 12, and you will get \$180 million or \$200 million a year, something of that order, so that is about five or six per cent added to the rates each year. That is a very rough number.

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Mr. Cureatz: Going back to the capacity, 18 per cent to 25 per cent, if memory serves me correctly, there has always been an argument about controlled voltage. I am sure you have an answer for that. I would like to hear it again, the possibility of Hydro always being at the higher end of its voltage capacity as opposed to the lower end. Of course, that would make a whole difference on demand/supply strategy and some saving of power.

Mr. McConnell: Are you talking about the voltage we deliver power at?

Mr. Cureatz: Yes.

Mr. McConnell: In today's presentation, I was really talking about the public values and wanting to acknowledge the views of the public.

When you buy any product, there is the question of all the qualities that are associated with that product. One of the qualities associated with electricity is whether you have it or not. That is reliability. There are other qualities. For example, if we were to deliver the electricity to a home at too low a voltage, it could burn out the equipment in that home. You could burn out a refrigerator motor if you tried to deliver too low a voltage. Certainly, if you delivered too high a voltage, you could be causing damage to the customers' equipment. So we have a voltage specification.

Mr. Cureatz: Which is? What do you try to shoot for? I guess it is 110 volts, but what is the variable?

Mr. McConnell: There is a voltage Ontario Hydro is compelled to deliver power at, within bands, to the municipalities. The municipalities, in turn, have voltage-regulating equipment. It is really what the municipalities deliver that is more

critical than what Ontario Hydro does. But if we did not deliver it within a reasonable band, we would be causing problems for them. Of course, in operating our retail system, we have to stay within a similar band.

There are other qualities associated with electricity, harmonics and stuff like this, which are becoming more critical now to some customers.

Mr. Cureatz: Pretty smooth. I am not happy with that. You are just talking about passing the buck to the local—

Mr. McConnell: No, I was not passing the buck to the local municipalities. I was really saying that the final voltage that is delivered from the municipalities depends upon the operation of Ontario Hydro's equipment and the operation of the municipality. That is just a simple fact.

Mr. Cureatz: Is there any fine-tuning, any adjustment of the dials above the voltage capacity?

Mr. McConnell: Yes. We undertake to plan and operate our system so that when we deliver power to the municipalities, we deliver it within a certain voltage interval. Of course, we deliver at different voltages. We can be delivering at quite a large number of different voltages.

Mr. Cureatz: Is there a possibility of any savings there if you do have to deliver it at different voltages? Are you always delivering it on the high side to ensure you will reach that voltage demand, or is there a medium range you could actually be delivering at to save costs?

Mr. McConnell: We tend to plan to operate in the middle of the range, but we will find circumstances such that we will tend towards the upper and the lower in real life. It is difficult to keep that whole network within the bounds on every delivery point.

Mr. Cureatz: As a final question, have you done intensive studies on the possibility of saving power on the regulation of voltage?

Mr. McConnell: I am not too sure I understand your question. Our customers and the apparatus that is hooked up depend upon the voltage being what it is supposed to be within those bands. If we were to suddenly try to plan and operate the system outside of those bands, we would be causing havoc to all our customers.

Mr. Cureatz: It is within those bands that I am interested. You have indicated that, generally speaking, you shoot for the middle of the range or the higher area of the band. I am asking, could there be any saving, looking within that band range? I understand that when you buy a fridge, it

has to run at whatever electricity is going through the motor, but there is still a bit of a range there.

Mr. McConnell: Specifications for equipment tend to be international, and national. That is to say, if Ontario is manufacturing a refrigerator with the understanding that it will be operated within a certain voltage band, it would hope it could market that refrigerator in British Columbia or the United States or anywhere. So those kinds of specifications tend to be national and international specifications. There is not much scope.

Mr. Palmer, could you speak to that?

Mr. Cureatz: The final question I am considering is, is there any chance of any kind of saving on the fine-tuning of voltage?

Mr. Palmer: There is very little. We operate tests each year by reducing voltage for a few hours to see what saving in megawatts there might be on the system. We know we will get perhaps 200 megawatts immediately after a voltage reduction, but if we hold it for a number of hours, the load will creep up again as industries adjust their own regulating equipment to get the power they need out of their own manufacturing processes. There is a very close relationship to the power supply, to the number of megawatts we deliver, and what industry and commerce need. While we make an adjustment and get a nice drop suddenly, we lose it after a few hours.

Mr. Runciman: I have some questions about the debt. I gather, Mr. McConnell, you mentioned when I was out of the room that there is some concern at the corporation with respect to the debt.

I brought the point forward several months ago about the increased value of the Canadian dollar in terms of the US dollar and your US debt, which according to the 1987 report is about \$9.5 billion, and the fact you are going to see a significant windfall, if you want to call it that. I think it is a \$41-million saving. That is for every one-cent value over the 74 cents you used. I am just wondering if you agree that if indeed the dollar stays about where it is now, you are going to realize a significant saving, that it could be in the neighbourhood of \$250 million to \$300 million.

I am wondering if there is genuine concern about the debt and if you are prepared to commit the corporation to using that as a one-time payment to impact on what you have in terms of a debt right now. The projections, and these were not done by myself, indicated that if you used it as a one-time payment, it would result in

accumulated savings over 20 years of close to \$2 billion and over 40 years of well over \$11 billion.

I am just wondering what your views are with regard to that windfall that may be coming your way.

Mr. McConnell: The relationship between the Canadian dollar and the currency of another country is constantly changing every year. Of course, a good deal of our debt that is not in Canada has tended to be in the United States, but we have had some debt in Europe and so on, moneys borrowed there.

Of course, if Ontario Hydro had the ability to forecast in the future how this was going to go, we would be rich. We would be able to do everything for free. But that is not reality.

To mitigate the question of how the foreign exchange rate changes with time, we have in part tended to hedge our borrowings, which tends to mean that we depend more on the Canadian dollar. Mr. MacCarthy, in response, could you add to Mr. Runciman's question?

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Mr. MacCarthy: I do not think there is a specific corporate commitment at this time that will necessarily be used to reduce the debt base, but there is no question that if, in fact, the Canadian dollar continues to perform at a higher level than we expect, our net income position will be higher and consequently the equity component of our overall capital structure will increase and the debt requirement will go down.

There are other potential tradeoffs. For example, we have not had as much hydraulic generation as we expected, so that would counteract against us in terms of our overall net income position. The fact we would get a higher net income because of the Canadian dollar would help reduce our overall debt requirements, but there is not a specific allocation of that differential associated with reducing debt.

Mr. Runciman: But you are not ruling out using it for that purpose?

Mr. MacCarthy: No. My expectation is that a good portion of that would be used to reduce debt.

Mr. Runciman: How are the forward exchange contracts, which you mentioned in your 1987 report, impacting on this?

Mr. MacCarthy: I think that for 1987—I am not absolutely sure on this—it is a negative impact because we had not expected—

Mr. Runciman: You are losing money on that.

Mr. MacCarthy: —the dollar to perform as well as it has. In previous years, in fact, there was a gain associated with the hedging contract. That is the whole principle of hedging, that you define the risk in advance. You know what it is and you are prepared to live with that.

Mr. Runciman: How much are you going to lose on those contracts if the dollar stays at its current level?

Mr. MacCarthy: I do not know, but we could find that out if you would like that information.

Mr. Runciman: It would be interesting to balance it against the other figure. I continue about the fact that you have talked continuously about relating your debt to the value of assets and equity. I think there should be some consideration there about it being related to percentage of your revenues. I know the credit rating houses continue to give you good ratings, but I suspect that is somewhat related to the fact that your tails are covered by the province as well.

Interjection.

Mr. Runciman: Yes. I will not put that on the record.

If you take a look at any in the private sector, obviously it would have been bankrupt a long time ago, looking at close to 50 per cent of your revenues being used to service your debt.

Mr. MacCarthy: Can I comment on that? If you look at other utilities across Canada, I think virtually all of them have that guarantee. As I recall it, there are two utilities that have a better debt ratio than we have. So it is not an uncommon practice and certainly it has contributed to lower-cost power in Ontario.

Mr. Runciman: You talk about debt ratio. In terms of percentage of revenue, what is the comparison there when you take a look at other utilities across Canada?

Mr. MacCarthy: Are you talking about the portion of the total operating costs that are associated with debt payment?

Mr. Runciman: Yes.

Mr. MacCarthy: I do not have those numbers.

Mr. Runciman: The figures that have been quoted in the past have been close to 50 per cent of your revenues.

Mr. MacCarthy: I think our fixed charges would be in the order of 50 per cent. I suspect some of the other utilities that have a higher debt ratio would probably be in that order of magnitude, but I cannot say it for sure.

Mr. Palmer: We could take Manitoba as an example, a totally hydraulic utility. There is very little cost for fuel, practically none, so it is entirely likely that a higher proportion of their revenue goes to debt.

Mr. Runciman: Perhaps our researcher could get that information for us. I, personally, would find it helpful.

Mr. Matrundola: I would like to ask a couple of questions and I would also like to make a comment. First of all, I would like to take this opportunity to thank Mr. McConnell for the excellent presentation he has made. It has been done very professionally. For me, as a new member of the select committee on energy, I found it extremely useful and educational. It will give me the perspective for making good comments in the future.

Having said so, I would like to ask what we do with excess energy. For example, say that today, to serve Ontario, we need 18,000 megawatts. We are able to produce 20,000 megawatts. What do we do with the surplus? The generating stations are generating the same amount of energy at all times when they are functioning, unless one of them is temporarily shut down. So what do we do with the excess energy?

Mr. McConnell: In our plants, the hydroelectric fuel, if you wish, is water and it has a very low cost to us once we have built the hydraulic plant, so we run those full out. We get every kilowatt-hour we can out of the hydraulic. In the case of nuclear, those fuel costs to produce a kilowatt-hour are also very low, so we tend to run our nuclear plants at base load and produce everything we can.

Our coal-fired plants are what we call our swing fuel plants. We have a coal pile there and that coal, of course, is expensive relative to hydro and uranium. As our customers need energy, we will burn more coal or less coal and that is how we manage the energy. If the power goes up, like last week, we have to run our coal-fired plants harder and convert more coal into kilowatt-hours. If it were a cold day and we needed less energy, then we would back those coal-fired plants down.

Mr. Matrundola: You have answered my second question because it was what we do when we lack energy, like last week when we had excessive heat and we needed more energy.

This, however, brings me to one more question only. What happens when we sell energy, say, to the United States or when we purchase energy from Quebec or Manitoba? When does that happen?

Mr. McConnell: Mr. Marriage will be talking about this in a presentation later this week. In essence, while you and I are talking, transactions are going on between ourselves and the United States. We identify for the next lamination on our system that is available what the cost would be, incrementally, of that kilowatt-hour and they do likewise. If our costs are lower than theirs, we operate and they shut down and we split the difference. We make a profit; they make a saving.

Mr. Runciman: Does that apply to coal-fired generation as well?

Mr. McConnell: Yes.

Mr. Runciman: I am just wondering, is there not a concern about the acid gas emissions? Does that not play a role in that kind of decision?

Mr. McConnell: Yes, that is a potential concern, but it is two-edged. You could say that if we run a coal-fired plant to ship energy to the United States, we are putting more sulphur dioxide into the atmosphere of Ontario, but you have to remember that the majority of the acid rain that falls on Ontario comes from the United States. There is a good chance that when we burn coal-fired plants to deliver electricity to the United States, we will get less acid rain back at us, so it is not as simple as it sounds.

Mr. Runciman: Nova Scotia will pay the penalty rather than us.

Mr. McConnell: Right.

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Mr. Runciman: Is that the same arrangement? You were just talking about New York state now. Is it—

Mr. McConnell: No. We buy and sell power from all of our neighbours. We operate coal-fired plants and deliver to Quebec on occasion.

Mr. Runciman: What is the environmental consideration in that one?

Mr. McConnell: In that particular case, if Quebec were blacked out or threatened, we are helping.

Mr. Runciman: That is not what you said. You said if you could produce it cheaper.

Mr. McConnell: No, in the case of Quebec, we are not so likely to produce it cheaper as just to meet the need. When they buy from us, we are not bumping hydraulic energy; it is just because they need it. They are short. That, for example, did happen this year when we sold to them.

Mr. Chairman: Perhaps we could now cover the section, "Customer Cost" and, at the same time, just go right into the section called "Power

at Cost." When they are both done, then we could have questions from the committee.

Mr. McConnell: That would be fine. I would like to turn to presentation 11.1C, "Customer Cost," strategy element 1.3. It is one of the five general strategic principles and that element says, "Low customer cost is vital." What I would like to do for the moment is to talk about what we mean by customer cost. What we mean by the words "vital" and "low"? Why did we not use "lowest"?

First of all, what do we mean by customer cost? When we are talking about the supply cost, we are talking about what you pay to your municipality or to Ontario Hydro for the electricity that you get. Your cost would be a function of how many kilowatt-hours you bought and a function of the rate for each kilowatt-hour.

On the other hand, if you are a customer, there is also a cost you are experiencing in order to perform the function. For example, if you were wanting a warm house, you would have to have your furnace and a fan, and if you had better insulation you might be able to cut down the amount of electricity you needed.

We are saying, when we talk about the strategy element that low customer cost is vital, we are not talking about the bill you get from Ontario Hydro. We are saying that the total customer cost is equal to the supply cost of the electricity plus the cost the customer experiences in performing what that customer wants to do with that electricity. In other words, it is not the electricity that has the value; it is whatever you do with that electricity for the customer that has the value.

For example, in our promoting, encouraging and providing incentives for electrical efficiency improvements, you will see as the week goes on that we are proposing to offer incentives that will in fact cause that electricity efficiency to happen. That in turn means that we are accepting conceptually that the electrical rates will go up. But what we really want to do is to minimize the total customer cost or, if you wish, minimize the customer's power bill. I just want to make sure that nuance did not go by you. We are not just talking about the cost of electricity. We are talking about the total customer cost in that general strategic principle.

Last week in the presentations that were made to you on public values, we went over the fact that our customers put a high value on reliability; but at the same time, when we talk about low customer cost being vital, even though we acknowledge that reliability is very, very important to our customers, still people are saying,

"Independent of that, it is still darned important to keep those costs low." By keeping them low, we are helping to make industry and commerce in this province more competitive which in turn enhances the economy which in turn maintains and improves the standard of living. We got very strong messages that, independent of reliability, do not forget about the fact that the cost of electricity is still important to us.

This is a graph showing the real price of electricity; that is to say, the cost-of-living adjustments and so on have been made to this. It goes from 1921 through to 1986 and shows how the real cost of electricity has changed over time. You might have thought when we were all hydraulic from 1921 to 1951, the prices of electricity were going to be lower. Then you might have thought when we started to run out of hydro and had to go to thermal and nuclear, they would have gone up, but they did not.

They were brought down to 1951 and, up to 1971, the price had been dragged down further, even though we were going to a fossil and nuclear system. That has been the trend in terms of the real price of electricity and that graph is indexed. The year 1986 is indexed at 100, and you can see how the real price of electricity has been brought down over time.

The primary reason why the price of electricity today is low has really been because of two components. It has been primarily due to the fact that we have depended upon high-capital, low-cost hydraulic energy and high-capital, low-cost nuclear energy. Those have been the two principal things that have kept our rates down. Every time I talk about debt, Mr. Runciman leaves the room.

This one is not expressed in real price but in terms of the price in dollars of the year. This means that as inflation has set in, electricity prices have gone up in dollars of the year. This is the average of all the electricity delivered in the United States for commercial, industrial and residential. That is all kilowatt-hours delivered in the whole of the United States and that is the average price that has occurred in the US. This top one is Ontario and this one here is Canada, and that is the average of all the electricity delivered in Canada. You can see that Ontario and Canada are tracking pretty closely.

The majority of electricity that is delivered in Canada outside of Ontario is in Quebec, British Columbia, Alberta, Saskatchewan and Manitoba. British Columbia enjoys all-hydro; Alberta enjoys very low-cost fossil fuels; Saskatchewan enjoys very low-cost lignite; Manitoba enjoys all

hydraulic; Quebec enjoys all-hydro. In fact, Ontario, even though it is only getting a quarter of its energy from hydraulic, has managed to stay in the hunt.

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Mr. Cureatz: Of course, Mr. McConnell, with that you are taking into account, I suppose, that in Canada most production is at cost whereas in the United States—is the Tennessee Valley Authority doing it at cost or is it trying to get a return on its money? I am not sure—

Mr. McConnell: If you ask what a public utility here enjoys as distinct from a private company which would be paying a profit to the shareholder, you could adjust by that around 11 or 12 per cent.

Mr. Cureatz: Say 10 per cent.

Mr. McConnell: But that will not account for the 100 per cent, the difference between the two.

Mr. Cureatz: No.

Mr. McGuigan: You stated earlier, Mr. McConnell—I think just in passing—that hydro costs to an average Ontario company would be from three to five per cent; that would be the average cost for the total operation. If our costs were half of theirs, it is a considerable advantage for them to settle here in Ontario when they are deciding upon—

Mr. McConnell: Yes. Basically, if you want to attract and retain, you must satisfy the reliability issue. Second, if you have low-cost electricity, that is particularly imperative if you are an energy-intensive company, where you take a lot of electricity. Of course, I think you would be seriously considering locating that company in Quebec or Manitoba if that was critical, because their rates have been indeed a bit lower than ours. In response, the answer is yes.

Mr. McGuigan: Just to flesh those figures out: If you took the average between three and five as four, so you reduce their cost two per cent, there is a two per cent advantage to coming to Ontario. Most companies are looking for a 14 per cent return on their money.

Mr. McConnell: Yes.

Mr. McGuigan: Two per cent is a big chunk of 14 per cent.

Mr. McConnell: Yes, and when you get two companies in tough competition, two per cent can make the difference. On the other hand, there are other factors such as the distance from the marketplace of the product you are manufacturing. We do not have it all our way, so this helps to compete.

Mr. McGuigan: But in the northeastern market we do have the distance advantage too, or we have very little disadvantage in the northeastern market.

Mr. McConnell: Yes. I think last Thursday I did talk about the fact that 50 per cent of the industries in Canada are located here in Ontario. This is one of the contributing factors, not the exclusive factor. I think you are right. Dane, would you like to add to that?

Mr. MacCarthy: No, I think you have covered it generally. The key point is that if you are an electricity-intensive industry, then it is an appeal. But at three per cent of your total operating cost, there may be a number of other variables which are more significant. Labour is certainly one; access to the market; transportation. But if you are up into 15 per cent of your operating costs, then your electricity rate is a really critical factor. We have some of those.

Mr. McConnell: The other word that is in that statement is "low." Low customer cost is vital. I said that we did not write down "lowest." We have said on a number of occasions that we want low costs but we have also said that when we went out and talked to our customers and talked to John Q. Public, they in fact said: "Look, we want low costs, but we are prepared to pay extra for reliability. We are prepared to pay extra to make sure that you do not bugger up the environment."

By and large, that willingness to want to cater to social values has in fact, in this statement, been embraced by our using the word "low" rather than the word "lowest." That was the spirit behind saying, "Low customer cost is vital" rather than, "The lowest customer cost is vital."

The reasons for that are that customers favour purchasing hydro. There is an implication there of being willing to pay a little bit extra. When we talked to the customers about this question of buying power from Quebec and Manitoba, they said: "That is fine. We do not mind your buying power from Quebec and Manitoba as long as it is not too much of it, because we do not want to become too dependent on future prices and availability. We like the jobs here in Ontario."

Anyway, that completes the presentation on cost. I would now like to call on Dane MacCarthy, as the chairman has indicated, to make the presentation on that item. Then we will take questions.

Mr. McGuigan: Before Mr. McConnell leaves, while Mr. MacCarthy is getting ready, I would just like to join in the lead taken by my colleague Mr. Matrondola in thanking Mr.

McConnell for his presentation. Whether or not we agree with everything he said will come out later when the final report is made. In any case, I am speaking at least I think for the government members who want to comment on his professionalism, his clear-cut and very well done presentation.

Mr. MacCarthy: Power at Cost: As the overhead indicates, power at cost is a fundamental principle in the way Ontario Hydro has operated. I thought it might be useful this afternoon to kind of set a little bit of the context in which it has developed.

Originally, there were 14 municipalities which got together. They asked the provincial government to construct facilities to supply them with low-cost power. The focus at that time was on the development of Niagara Falls. Subsequently, three commissions in total were established in response to the "cheap power movement." Is there a problem?

Mrs. Grier: There is a problem with the air-conditioner.

Mr. MacCarthy: As I indicated, the municipalities got together and were asking the government to construct a facility to get cheap power to them. In 1905, Adam Beck and his allies persuaded James P. Whitney to adopt a platform of public ownership in his campaign for Premier of the province. Whitney successfully asserted that power of Niagara Falls should be "free as air" and that, "Every citizen should be free to utilize the power that the Almighty has given to the province," as quoted in the *Globe and Mail* in 1905.

In April 1906, 1,500 delegates from 70 municipalities met in Toronto and passed a resolution supporting a permanent provincial commission for the generation, transmission and distribution of electric power and light. In May 1906, the government passed a statute entitled *An Act to provide Transmission of Electrical Power to Municipalities*. That was shortened in 1907 to the *Power Commission Act*.

In June 1906, the Hydro-Electric Power Commission of Ontario was established. That was the foundation of Ontario Hydro. I think one important thing is that the first legislation did not represent an outright commitment to the notion of public ownership of the province's entire electric industry. However, Adam Beck appealed to municipal ratepayers with the concept of power at cost and several cities voted to build their own municipal distribution systems to take power from that transmitted from Niagara by the Hydro-Electric Power Commission of Ontario.

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There was a debate from profit-oriented electricity interests, and they identified the issue as one of economic efficiency versus subsidized distribution. Sir Henry Pellatt of Casa Loma fame was also chief executive of the Toronto Electric Light Co. at the time, and he asserted that the public power undertaking was inequitable, oppressive and economically unsound and that the power-at-cost policy was illusory and fictitious. But the choice of the people was for public power. The public felt it should benefit from the province's natural endowment rather than have these benefits siphoned off by "Americans or Toronto capitalists."

That is some of the background. What are some of the conclusions we can draw from this history? I think one conclusion is that the evolution is unique. It evolved out of municipal pressure for a co-operative electrical enterprise. In response, the government created a financially self-sustaining provincial enterprise with broad powers to purchase, supply and deliver electric power. The province stood as the creditor, and rates charged by the commission to each contracting municipality were designed to enable it to cover its expenses and to service and repay its debt. These features remain intact in the current legislation.

Second, it is clear that the public power movement has been characterized not by desire to achieve state domination of a central industry but by a notion of community ownership and community-wide distribution of the socially and economically beneficial commodity.

The third conclusion, which really focuses on the issue of power at cost, is that the legislation founding Hydro was explicitly intended to incorporate power-at-cost principles in preference to private sector pricing practices.

The power-at-cost principle is in the original Power Commission Act, it is in the present Power Corporation Act and it is based on the cost to the corporation, as determined by it, for the supply and delivery of power. It includes operation, maintenance and administration; depreciation and insurance; energy conservation—that is a relatively recent change that was incorporated a few years ago—the rural rate differential—and this is the provision whereby rural retail customers are assured that their charges will be no greater than 15 per cent above the average of the municipal charges—interest and expenses of debt service, as Mr. McConnell was talking about; earlier debt retirement; and a rate stabilization and contingency fund.

A key issue behind the power-at-cost concept was the idea of fairness and equity. That was seen by the public as being a critical element. The community desires utility rates to be fair and the cost allocation, the tracking of costs, to be seen as fair and equitable, which essentially is assigning equal costs to customers, causing equal responsibility.

This is a subject that is reviewed annually before the Ontario Energy Board and is the focus for that hearing. There have been some special hearings in this whole area determining this, but it is a critical element. Power at cost is a traditional mandate that continues to be an objective.

In summary, it is part of the original promise of public power. It is an essential consequence of the co-operative aspect. It is part of a traditional mandate. We see it as an essential principle, we feel it has stood the test of time and we see no reason to abandon it at this point in time.

Mr. Chairman: Thank you.

Mrs. Sullivan: I am going back to the previous chapter for my question relating to customer costs. When Hydro is reviewing the options—whether they are supply options or demand management options—and it takes into account customer cost, I am wondering if it includes utilization costs, both when it is assessing supply and when it is assessing demand management options?

Mr. McConnell: The answer is that we include that in both.

Mrs. Grier: I am interested in having some expansion on Mr. MacCarthy's comment about the inclusion of energy conservation in the definition of power at cost.

Mr. MacCarthy: As I understand it, the reason for the inclusion of that particular element within the act is that there was some question whether or not the term "supply and delivery of power" incorporated the energy conservation component, so it was specifically identified for inclusion as a legitimate element in power at cost.

Mrs. Grier: That is a recent inclusion?

Mr. MacCarthy: Yes. I do not have the exact date, but it is within the last 10 years, I believe.

Mrs. Grier: How does Hydro decide, when it is calculating power at cost, how much to allocate to conservation? My sense is that the amount allocated to conservation has increased over the last few years. At one time, you were spending a lot on sales and advertising. That presumably was also part of power at cost.

Mr. MacCarthy: Yes.

Mr. Palmer: Whatever the costs are that we spend on in the current year appears in the rate base and becomes a part of the cost for that year.

Mrs. Grier: OK, but in making your comparisons between the various options, if you are trying to compare an option with your existing power at cost and one of the options is greater energy conservation or incentive-driven energy conservation, how does that get factored in, or is that a true comparison?

Mr. Palmer: I think you are talking about the selection of the options, which is another kind of issue from the power-at-cost principle.

Mrs. Grier: Does the evaluation of the options not require examination of the existing determination of what power at cost is and rating them against the current—

Mr. MacCarthy: Let me see if I can get at what I think is behind your question.

Mrs. Grier: Maybe I am confused in my understanding of power at cost.

Mr. MacCarthy: Power at cost is really what is reflected in the rates you and I pay in our electricity bill. If you are raising the question in terms of how we decide whether or not to pursue a demand management option versus a supply-side option, then what we do is try to compare the total cost to the customer of both those options, assess the social and environmental aspects and then go with the one that provides the greatest benefit to the customer. That is the whole tradeoff issue that we are in.

Mrs. Grier: OK. I have no further questions.

Mr. Palmer: Having decided that, having decided on the choice between supply and demand, then the costs of that decision begin to flow into the revenue requirement and that is charged to people like you and me through the municipal utilities. There is really a two-step process. One is the decision about selection, based as Mr. MacCarthy has outlined. Having made the decision, then costs begin to flow into the rate base, to use the technical term, largely the customers.

Mrs. Sullivan: I think we were both maybe trying to get to the very same aspect here when I asked about the inclusion of the utilization costs. I suppose we are looking at power at cost here as a concept and as a principle of operation, but as well, we are trying to place into the context of overall strategic planning the question of utilization costs, which are going to be substantially different if you are looking at new demand

management options from what they are in supply options.

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Therefore, the question I ultimately have to think about is, are the costs going to be minimized for supply options as compared to demand management options when we get into making choices? Similarly, with power at cost in the environmental questions, the social questions. Hydro is a generator of industrial development, for example, which may also be a cost factor. How would you put that in when you are talking about power at cost ultimately? Power at cost has to include all of the administrative detail.

Mr. Palmer: Yes.

Mrs. Sullivan: Similarly, that is why I asked the question about why you would capitalize, for example, the demand management options or incentive options.

Mr. MacCarthy: We are concerned about capitalizing the demand management options, and that is our current perspective. We are still assessing it.

One of the reasons we are doing that is that we are concerned if we decide to pursue a demand management option which, when we looked at the tradeoff with the supply option, was more attractive to society in the long term but increased the rates by a greater amount in the short term, because when we go with the supply option and we say, "OK, we are going to build this unit," we do not put that into the rate base right away. We wait until that unit comes into service and then it goes into the rate base.

If we pursued a demand management option, let's say, which was of equivalent cost, and we put that into the rate base immediately, there might be a negative reaction associated with that, less customer acceptance, and what we want to do is really what is best in the long run to make those equal in their treatment. We are saying that if you had a supply unit that only lasted five years—a light bulb, for example, that lasts five years—and a demand management option, you would want to treat them on a roughly similar basis. That is why we are approaching it on capitalizing, but we are still looking at that because there are more uncertainties with it.

Mrs. Sullivan: I suppose the environmental protections would all fall pretty much into the capital side in any case; the cost of new scrubbers or of a new environmental technology relating to the coal-fired plant. That would fit on that capitalization side—

Mr. MacCarthy: I think we will be getting into more detail later on this whole issue of tradeoff.

Mr. McConnell: I was going to say, Mr. Chairman, that I assure you we did not prime either Mrs. Grier or Mrs. Sullivan in advance, but the questions they have asked I think are extremely critical to the understanding of this committee; they put their finger right on the very important question. It just happens that the next presentation deals with it.

That may not answer the questions and make you fully satisfied, but our next presentation has to do with measures of cost and evaluating options. At the same time, I think what Mr. MacCarthy has said is important; that you understand we are not proposing to go out and charge our customers double, triple or quadruple the actual costs we incurred to depress demand management. We will be billing our customers in accordance with the cost experience, and that is power at cost. On the other hand, the measures of cost which come next I think will throw some light on trying to make these decisions in evaluating the options.

Mr. McGuigan: I want to make a couple of footnotes to history. It is my understanding that in that area of 1905, 1910 and so on, there was not only the Toronto power company but power companies all over Ontario which were establishing themselves. When they are talking about the history of the little town of Blenheim, the public library was at one time the site of the power generation and I assume, from the size of the smokestack that still exists—this is for Mr. McConnell's benefit—it was coal that was firing it back in those days.

Mr. McConnell: That is right.

Mr. McGuigan: So coal did not burst on the scene in 1950; we had a small amount of coal back in the very early part of this century. Had private enterprise gone ahead, we would have had a lot more so-called dirty generation than we currently have under public ownership.

Mr. Matrundola: I do have a little bit of a problem sometimes understanding these matters of cost. How do we check the cost? Are we keeping check of the cost? In your example, nobody can give me a proper answer.

You can take two corporations that will bid, say, on building a nuclear plant to supply energy. One corporation, corporation A, says it costs \$10 billion and it is making a profit. Corporation B says it costs \$12 billion and ends up losing money because it is the structure of the corporation.

Certain corporations build an empire for themselves and certain corporations will operate on a tight budget. Do you understand the concept I am trying to make?

Mr. McConnell: I understand the concept you are trying to make, sir.

Mr. Matrundola: What I would like to know is, how do we, on behalf of the public, check the cost? You can say, "This is our cost and we are supplying at cost," but somebody else could supply it at 25 per cent less and make a profit, possibly.

Mr. Palmer: I think in part Mr. McConnell's chart that showed that the costs in Ontario compared quite well with those in the rest of Canada, and were certainly less than those in the United States is at least one indicator that your utility is managing its business reasonably well. There may be other indicators, but that is a kind of bottom-line indicator.

Mr. Matrundola: You also supply retail energy to users, but I do not know whether you work the same way and might be able to tell me how the municipalities work and why they work that way. I will take the example of North York. If a person does not pay the hydro bill on time, he may get a few days of grace—two or three days, whatever—and then I believe they slap a penalty of five or 10 per cent. Is it five or 10?

Mr. MacCarthy: I think it is five per cent.

Mr. Matrundola: Five per cent. If one pays the hydro bill one week late, one pays five per cent more than the cost of the bill. On a monthly rate—it is five per cent on a monthly rate—that will be 60 per cent a year. After two weeks it would be 120 per cent; after only one week it is 240 per cent. If somebody was lending money at that rate, it would be called loan sharking and would be forbidden.

If, for example, I do not pay my hydro bill on time, I pay five per cent more, but they want the money right away. I cannot say, "OK, I will pay you the five per cent more"—which is 60 per cent per year—"but I'll pay you next year" or "I'll pay you next month." They want it right away—let alone some of the examples that are even worse of certain other corporations or municipalities and so forth—which is highly unfair.

I believe it would be more equitable if they said, "OK, you're going to be late. Pay 15 or 18 per cent"—whatever it is—"and you have one month's time to pay," just like realty taxes, for example, but then you pay next month which is quite high too anyway. How do we cope with

that, because I do get a lot of complaints about that in my constituency?

1630

Mr. Palmer: That is kind of a serious question.

Mr. Matrondola: It is serious. That is why I am asking it.

Mr. Palmer: Let me tell you first why they started to do that. It was a power-at-cost system, and the principle of cost causality worked. If you were a delinquent payer of your energy, you incurred certain costs as a result of that in the administration of the utility. They estimated that originally it represented about 10 per cent of the cost of your bill, so they made it essentially a penalty charge equivalent to that. It was not in any sense related to interest on money. It was just the original cost incurred, so the delinquent customer should pay that amount.

In addition to that, when you use electricity, you use it in advance of being sent a bill. If you are billed on a couple of months—you used the electricity perhaps in May and June—about the middle of July you get a bill for it and you have until August 1 to pay, so that you are really paying some three months after you started to get the benefit of the commodity. That was a factor taken into account there as well.

Mr. Matrondola: But am I not correct in assuming—I believe it is a fact—that they are holding a deposit on your hydro account? Not only that, but perhaps a more equitable way of doing business would be, in fairness, to say: “OK, your hydro bill is due on the 25th of the month. If you pay by that date, we will give you three per cent discount; if you pay after that date, you pay a penalty of three per cent. You have one month to pay.” That way, it would be a sort of inducement to a good citizen to say: “Hey. I can save three per cent. I will pay before the date. If I am going to pay after the due date, then I will pay three per cent.” I think it makes good sense.

Mr. Palmer: It used to be worded that way, was it not? You got a hydro bill with a gross amount, and if you paid on time, you got a five per cent discount.

Mr. Matrondola: It used to be; not now. I do not remember those days.

Mr. Palmer: Let me tell you why it is worded differently, because that was very misleading indeed, and the utility was not being quite honest about the situation. In fact, they calculated the rates based on the net cost, not on the gross cost, so to say that you got a discount by paying early had some lack of honesty in its application. Since

the utility tended to be highly ethical, as part of our regulatory mandate we brought some pressure on the utilities and ourselves to call it a late-payment charge because, essentially, that is what it was.

Mr. Matrondola: Excuse me. I have no problem with a late-payment charge. It is quite normal. I believe people have to pay on time, and if I am late, I am quite willing to pay the penalty, but I believe it is too high.

Mr. Chairman: I wonder if this line of discussion is not really taking us away from the topic today. Maybe we could pick it up.

Are there any further questions related to customer cost and power cost, as discussed by Hydro? If not, noting the time is 4:30, what I would like to suggest the committee do, since we are going to start now on measures of cost, and it has been indicated already that is a very important thing for us, is to do that for the rest of the afternoon. Perhaps the committee could sit for another hour or so in order to do that. Then Mr. McConnell can pick up with the load forecast bandwidth and so on tomorrow morning. I am not sure if we are going to get much further than the measures of cost this afternoon.

Mr. McConnell: You would like us to proceed then with measures of cost this afternoon?

Mr. Chairman: Yes, I think so, if that is agreeable to the committee, although I might suggest that we take a short seventh-inning stretch, maybe adjourn the committee for five minutes. Everybody get up and stretch, then we can reassemble in five minutes.

The committee recessed at 4:35 p.m.

1648

Mr. Chairman: If I could call the meeting back to order, please, we will move on to the next topic, which is measures of cost. Mr. Snelson, I believe you are going to be presenting this to us, so perhaps you could proceed.

Mr. Snelson: That is correct. The first thing I want to point out is that we have made some progress. We have finished with the general strategic principles and we are moving on to the general demand/supply strategies, the strategies that deal with detailed strategies that are general to both demand and supply. As far as the first one is concerned, I am hoping this will help to put in perspective some of the discussion that has already been held.

Mr. Chairman: If I could just interrupt, I believe people will find the papers relating to

today's subjects in the brown envelopes in front of them.

Mr. Snelson: There are two strategic statements I will be talking about. They deal with measures of cost. We have already had the statement that low customer cost is vital and there is power cost and so on. But what do we mean about cost? People mean different things. Whose costs are we talking about? What things are included and what things are excluded? I am trying to put some specific definitions around those issues.

The two strategic statements are that we will aim to develop a mix of demand/supply options that provides electricity service—please note those words—to customers at lowest total customer cost and that the cost of meeting social and environmental requirements will be included in cost evaluations of demand/supply options. I will first try to define some of those terms and then I will go on to the statements themselves.

1650

Electricity Service: The idea has been raised by some of the members and by Mr. Argue, but just to make it quite plain, what we mean by electricity service is different from just electricity. The services that electricity provides are many and varied. They include light, motive power in motors, power for computers—a thousand and one different things that people do with electricity. Customers tend to value electricity for the service it provides rather than for just kilowatt-hours. Customers do not want kilowatt-hours. They want a warm house or cold beer, so it is the services it provides that are important.

This is particularly important when we come to demand planning, because when we look at the demand options, we are looking beyond the meter. We are looking at how customers can save electricity and still receive the same level of electricity service.

In the public consultation, we heard that customers want to avoid waste and increase electrical efficiency, but they also want the comforts and convenience that electricity provides. Customers want to preserve the same level of electricity service, and that is what we attempt to do in demand planning.

Let's go on to what we mean by customer costs. On Friday, Mr. Charlton correctly pointed out that we had mislabelled one of the figures in chapter 10 as customer cost when in fact it was electricity rates. As we proceed this afternoon, you will see that we have very different meanings between those terms.

I am going to be talking about customer costs. There are two sorts of costs. There is the supply costs, the costs that the utilities incur to generate, transmit and distribute electricity and deliver it to the meter. Those are part of customer costs because the customers pay for them through their electricity bills.

Then there are the costs that the customer has on the other side of the meter to utilize that electricity. Those are called utilization costs, and they include the costs of the customers' electricity equipment.

As I have said, the supply cost is the cost incurred usually by Ontario Hydro and the municipal utility. It is all the cost up to the electricity meter. This includes the cost of building generating plants, transmission lines, transformer stations and so on. It includes the fuel—coal, uranium, water rental and oil—that we use. It includes the operation, maintenance and administration costs, which include the cost of the people who operate the system and make repairs and even the cost of the people who prepare system plans.

There are other costs. There are costs for managing wastes, for ash disposal, for disposal of waste from scrubbers, waste from nuclear units, spent fuel. There are costs of environmental controls and costs of mitigating community impacts.

The supply costs are generally incurred by the utility and paid for through the electricity bills. When we are analysing supply options, if we are only comparing one supply option with another, then it is only necessary to look at the supply costs. But when we are analysing demand options or when we are comparing supply options with demand options, it is necessary to look at the utilization costs as well. Mr. McConnell mentioned that to Mrs. Sullivan, I believe, in answer to her question earlier this afternoon.

What are the utilization costs? These are the costs usually incurred by the customer—they have been the responsibility of the customer—and they include all the things that are required to change that electricity from kilowatt-hours into a service that is useful to the customer.

I am going to use as an example throughout this presentation what is required to provide the electricity service of a warm house. The utilization costs obviously include the household wiring and the costs of the furnace, heat pump or whatever other heating device is used to create the warm house. They include the costs of the thermal insulation and weatherstripping that are

necessary to keep the heat in the house where it is wanted and avoid its just dissipating into the environment.

Normally, the customer chooses and pays for the utilization equipment, although Ontario Hydro has always had an interest in how the customer uses electricity. With an increased emphasis on demand management and demand planning, Ontario Hydro is intensifying its efforts to assist customers to get the best value out of the electricity they buy. We may very well be contributing towards utilization costs with financial incentives.

I have talked about a specific demand option of a warm house. Clearly, if there are other electricity services involved, then there are other things that come into utilization costs like electric motors, lighting equipment, refrigeration equipment and so on. There is a whole host of them.

You will recall the strategy talked about total customer cost. The total customer cost is the sum of the supply costs usually incurred by the utility—and here we are talking about Ontario Hydro and the municipal utilities. The utilities have the responsibility to manage the supply costs.

Utilization costs have mainly been the responsibility of customers, and with demand management, the utilities will be influencing how the customers choose their equipment, what sort of equipment is installed, what sort of insulation levels are provided.

The only other thing we have to look at is the customer. Is the customer a bulk power customer? Is the municipal utility the customer we are talking about? The meaning we have here is that the customer is all end users. That includes the customers who are served directly by Ontario Hydro and also the customers who are served through municipal utilities. It includes both the participants in the demand management programs, or whatever programs there might be, and also the nonparticipants, the people who do not have that opportunity or choose not to take part in the program.

This strategy element essentially says that we will choose the lowest total customer cost. That is very similar to what has previously been referred to—and we talked about this in the previous select committee—as a societal cost test. In that select committee, we talked about a test that is on this basis, the societal cost or total customer cost, and we also talked about a no-losers test. The principle of the no-losers test was to choose incentive levels and options in such a way that electricity rates would be

minimized. This is why it is so crucial to keep ourselves clear as to the difference between rates and bills.

We asked the select committee in 1986 for some advice in this respect and we got it. The select committee recommended against the no-losers test, and that is what we have built into our strategy.

I am going through some numbers. The next three slides deal with an illustrative example of the way in which this sort of test will minimize customers' bills but may not minimize electricity rates.

The example I have chosen is providing electricity service to a warm house. There are two means of doing it, an electric resistance furnace or a ground-source heat pump. The amount of electricity used each year, if we are doing it by means of a resistance furnace, is quite a lot higher than if we do it by means of a ground-source heat pump, because that is more efficient. It pulls energy out of the ground as well as providing energy from the electricity system.

Clearly, the supply cost is going to be quite a lot higher for the resistance furnace than for the ground-source heat pump. In this case, I have used a rate of five cents a kilowatt-hour to determine the supply cost. Now these are hypothetical figures to make the point. The utilization cost is the cost of the equipment that would be used here and everything is done on an annualized basis to keep the example simple. The assumption is that the annual cost of having the furnace in the house is about \$200 if it is a resistance heat pump and about \$800 if it is ground-source heat pump. You add up the supply cost and the utilization cost and the resistance furnace is more expensive in total customer cost basis than the ground-source heat pump. The difference is about \$100 in this particular example.

1700

Mr. South: I am lost there. On the utilization cost, how do you get that?

Mr. Snelson: This is the cost to the customer, or whoever pays for it, of in this case the resistance furnace. Let's say the resistance furnace, the wiring and insulation costs \$2,000 and that the way of converting that to an annual charge was 10 per cent per year—

Mr. South: I see, OK.

Mr. Snelson: In this case, the cost might be \$8,000 and it would convert to \$800 per year. This difference might not be large enough and be seen soon enough by the customer for him to

really go out and spend the \$8,000 on a ground-source heat pump. For the electrical utility to make this lowest-total-customer-cost option happen, it may be necessary to provide an incentive. In this case, I have assumed an incentive of \$500 which is most of the \$600 difference, but not all, between the utilization cost of the furnace and the ground-source heat pump.

Mr. Cureatz: But there is no incentive now for that, is there?

Mr. Snelson: No. This is the sort of thing that will come about with financial incentives for demand management.

This slide carries the example through to the effect on electricity rates and to be able to do that, I have had to talk about what sort of system this is working on. What sort of system is it being added to? I have assumed that the base system that you are adding everything to has a revenue requirement of \$5 million, an electrical load of 100 million kilowatt-hours which leads to an electricity rate of five cents a kilowatt-hour.

There are two options here. One is a program of 1,000 resistance furnaces and this is a program of 1,000 ground-source heat pumps. These are numbers carried forward from the previous example.

The supply costs of these 1,000 resistance furnaces, if you take the numbers from the previous slide, worked out to \$1 million, multiplying them by 1,000 and the supply costs of the ground-source heat pumps works out to \$300,000. Now in the ground-source-heat-pump case, in addition as a cost that the utility must recover through rates, you have the amount of money that has been given in financial incentives and that was \$500 per unit or \$500,000 for 1,000 heat pumps. So the total revenue requirement of the utility is \$6 million, which is the \$5 million you started with plus the \$1 million additional supply costs in the furnace case, and \$5.8 million, which is less in the case with the ground-source heat pumps because of the \$5 million plus \$300,000 and \$500,000.

To get at the rate, you also have to look at the impact on load. The additional load of the resistance furnaces is 20 million kilowatt-hours, which leads to a total load of 120 million kilowatt-hours. The additional load in the ground-source-heat-pump case is six million kilowatt-hours, which leads to a total load of 106 million kilowatt-hours. This is the more efficient option—the lower energy requirement—and so the total electrical load is lower.

The electricity rate comes about by dividing the revenue requirement by the total load. In this case, the electricity rate remains five cents a kilowatt-hour and even though, in this case, the revenue requirement is lower, the load is quite a lot lower so you are dividing by a smaller number. The revenue requirement or the electricity rate goes up to 5.4 cents a kilowatt-hour.

This is not all bad news. That is the reason we propose this, that is, that when you look at electricity bills, the picture is a little different. This is the same example carrying it on to what happens to electricity bills. In this case, it is divided out between participants in the program, nonparticipants, and what happens in total.

For the participants, they use a lot less electricity with a ground source heat pump than with a resistance furnace. Even though they see a higher electricity rate with the ground source heat pumps than with the resistance furnace, their electricity bill is a lot lower. In total, for all the participants, it is \$330,000 compared to \$1 million.

For the nonparticipants, the situation is a bit different. Their use remains the same whether or not this program was undertaken; whichever program was undertaken. The rate is higher with the ground-source heat pump than with the resistance furnace, albeit not by a very large margin. Consequently, their electricity bills are higher with the ground-source heat pump than with the resistance furnace.

In total of both the participants and nonparticipants together, the total bills are lower, because when you average it all out, take the total use and the total rate and divide them out, then this is the revenue requirement of the utility, obviously, which is power at cost—that is what you recover from the customers—and the total customer cost is lower with the ground-source heat pump than with the resistance furnace.

I think I have made it plain that our strategies do permit electricity rates to be higher so that incentives can be paid for demand management. The strategies on the selection of the specific level of the financial incentive do have some elements in them which aim not to eliminate any increase in electricity rates but to keep it to a level which is acceptable to customers in general—and that will be coming up in a later presentation—and there are also things that can be done to make this situation more equitable by offering a wide range of demand management programs so that most customers can participate in some program or other, so most customers will be participants and

only a few customers will be nonparticipants in total.

In deciding which options to pursue—and I want to make this plain: what this strategy element is talking about is not how to choose the incentive; this is talking about deciding what options to pursue—the criterion is the lowest total customer cost. This includes the supply costs, which are the responsibility of the utility. It includes the utilization cost, which is normally the responsibility of the customer but with demand management utilities will influence the utilization choices and in some cases provide incentives.

The lowest-total-customer-cost alternative is the lowest-cost way for society to meet the need for an electricity service. This strategy may result in higher electricity rates for demand options compared to supply options, particularly if incentives are high, but the strategy should always result in lower electricity bills, in total, to all customers.

We are shifting a little now. We are talking about the environmental costs, the cost of meeting social-environmental requirements, and we have had the general strategic principle that our activities must be conducted in ways that are acceptable from a social and environmental perspective. That leads to Ontario Hydro's incurring additional costs to meet environmental regulations, to meet good engineering practice, which is based on the best design criteria for our society and so on, and it has to be consistent with our corporate policy on good citizenship.

1710

These involve additional costs. There are measures which are undertaken to reduce environmental impacts which involve additional cost. The costs of meeting these requirements and the additional measures are included in the capital and operating costs of the system. These costs are passed on to our customers through electricity rates.

There are many examples of measures that Ontario Hydro adopts to reduce social and environmental impacts, the costs of which are included. These measures range in costs from many millions of dollars to a few thousand or less. No matter what the size of the cost, each one is important. I will give you some examples.

For about 10 years, we have been using western Canadian coal of low-sulphur content to reduce acid gas emissions and to provide diversity in coal supply. To do that, it was necessary to build a coal-blending facility at Nanticoke to be able to burn the western coal.

In addition, the coal from western Canada is more expensive than US coal, which has a higher sulphur content. Last year the additional cost of western Canadian coal was about \$70 million. As we go on through the 1990s, we expect to add scrubbers to some of our coal-fired plants. That will have costs measured in hundreds of millions of dollars.

Another example is that in the late 1960s we made modifications to the Hearn generating station, including adding a tall stack to disperse the emissions and providing the capability to burn natural gas, which is a cleaner fuel. Through most of the 1970s Hearn was run on natural gas. The additional cost, for instance, in 1975 was about \$12 million. This helped to reduce emissions in the downtown Toronto area.

The estimated cost of future nuclear fuel disposal and station decommissioning is collected through rates. Between 1982 and 1987, Ontario Hydro has accrued \$468 million as a future liability. This practice allows us to charge current customers an appropriate share of these future costs so that we are not leaving a burden to future generations.

Going to something a little smaller, ospreys, members of the hawk family, often nest on top of our distribution poles. To protect these birds, Ontario Hydro will move a nest to a new location on a pole where it is safer or to some other safer spot somewhere away.

In a hydraulic plant, we are just completing a program on the Mississagi River downstream from our hydraulic plant to reduce the erosion of the river banks due to the high flow when we peak the hydraulic plant. That program is costing us \$7 million.

Those are just a few of the many examples. When we are looking to the future and estimating the costs of the things we are going to do, then we include in the cost estimates allowances for the costs of meeting environmental regulations, of providing good engineering practices and of being a good citizen. That adds to our costs. We include it in our estimates and it is part of the evaluation.

To wrap up this presentation, we have talked about two strategy elements dealing with measures of cost. The first one is that we aim to develop demand and supply resources at the lowest total customer cost of electricity service. I have talked about what I mean by electricity service. This allows the economic development of an electricity system with continued and improved efficiency for the benefit of our customers.

Cost evaluation includes the costs to meet social and environmental requirements and the costs of adopting additional measures that are required for good citizenship and good engineering practice.

Mr. Chairman: Thank you. Are there any questions from the committee?

Mr. McGuigan: In the illustration you had showing that nonparticipants actually suffer under the program where you have benefits to the users of heat pumps, when you in practice actually offer a range of benefits to the customer, where do you come to the point of making such a policy, so that perhaps the person who chose not to or could not use heat pumps would have available the option of putting different windows in the house or other items?

I guess what brings this to mind is that a friend of mine who retired was a sound environmental person here in the city of Toronto. He said one of the worst problems he had was sound when people installed heat pumps on the roofs of buildings. It was all right when they installed one out in the backyard, but when they did not have a backyard and installed it on a back porch or on a roof, it acted as a sounding board and created an awful racket in the neighbourhood. That is just an aside.

My main question is, when you develop a mix of a package of benefits so that it could not help me in one specific instance but it could help me in another area, and also you would probably put a ceiling on it, it would distribute the benefits and the costs a little more fairly than the specific example you gave.

Mr. Palmer: We agree with you, Mr. McGuigan. The answer to it, at least in part, is to have a broad range of programs so that most customers can participate in one way or another. The problem that Mr. Snelson outlined does not go away, but if you cannot benefit from that option, perhaps there is another. Obviously, a few people are going to be left who have not been able to benefit from any of them and they are not going to feel too great about the whole proposition.

Mr. McGuigan: You might think of putting a ceiling on it so that if you had, say, six programs, one person could not benefit on all six.

Mr. McConnell: I think when Mr. MacCarthy talked first of all about the general strategic principle, customer satisfaction, if we were to design demand management programs in which all of the benefits went to a few customers and no

benefits to certain customers, we would find ourselves with customer dissatisfaction.

On the other hand, as Mr. Palmer has indicated, if we can have a demand management program that benefits a certain set of customers and another demand management program that benefits another set, we are more likely to meet that general strategic principle of customer satisfaction by making sure there are enough cookies in the jar to go around to everybody.

Mr. Snelson: I would like to comment on the sound issue, because I think that raises an important issue of the customer's satisfaction, which, as we have said, is the overriding principle, and there are other things that matter for customer satisfaction than energy efficiency. Energy efficiency is one important thing, but if a customer ends up finding that the device that is efficient is very noisy, then he will be dissatisfied.

I can talk to that with some personal experience, because I installed a high-efficiency gas furnace in my house.

Mr. McGuigan: One of those buzz bombs.

Mr. Snelson: I had a noise control order put on me by the city because of complaints by my neighbours from the noise of the high-efficiency gas furnace. For quite some time, until we managed to cure to problem—we did cure it—I was a very dissatisfied customer of the gas company.

1720

Mr. MacCarthy: I would like to make one other point. We have identified a very, very fundamental principle here and it has very significant implications for the direction that we pursue. We are saying in our strategy that we can have a situation where there are some customers who will benefit and some customers who will not benefit at all, but if the total benefit to society is greater, we are prepared to pursue that option. As the person responsible for the whole customer thrust, I would like the situation where every customer was completely satisfied.

We are adopting a strategy where that will not happen in some cases. Some will have to pay more. But we are saying that, in total, it still is the right thing to do. It is a very significant principle. I can assure you that when I make a presentation to the Association of Major Power Consumers in Ontario and I say, "Look, the bill for electricity usage has gone down for society at large, but your rate has gone up," they are going to say: "Don't give me that BS. The rate is higher than it is in Quebec." That is an issue we will have to

address. That is an issue this committee should be aware of. We are still recommending pursuing it, but it is fundamental in its importance.

Mr. Charlton: I have a supplementary on that aspect of what is being discussed. Just to put this in a little better perspective in terms of your response to Mr. McGuigan that there are going to be some losers perhaps on this particular incentive program or this particular demand management program, but if you have a broad variety of demand management programs, then it is less likely that there are going to be very many overall losers.

To put that in another perspective, I guess, is to take this table you had and imagine that there are 20 tables like that. To figure out the total net account, you have to look at what the net result of each of the programs is. Is that essentially what you are saying in response to Mr. McGuigan?

Mr. MacCarthy: Right.

Mr. Charlton: Essentially, what you would hope to look for in a perfect world is a point at which although, as a result of your whole range of demand management programs, there may be a resulting rate increase, the vast majority is going to get some kind of a reduction in the bill in terms of actual energy consumption.

Mr. McConnell: Right.

Mr. MacCarthy: That is the whole thrust.

Mr. McConnell: Right. We will not meet the no-losers test on every individual program, but we will have a win-win situation if we have a broad menu of programs in which everybody can benefit.

Mrs. Grier: Just to follow up on that point, maybe we will have a win-win situation when people fully understand the advantages of not having any more acid gas emissions or not having their children's children having to dispose of nuclear waste. Is it not all in how you explain the losses that we as a society are going to be facing?

Mr. McConnell: I do not have any problem with the spirit of your principle. I might have some problem with your examples.

Mrs. Grier: May I get to your example? I am still struggling, I must confess. Back in figure 11.2A.8, I do not understand how the utilization cost of our ground-source heat pump is \$800 when its supply cost is so low.

Mr. Snelson: If you will recall, the utilization cost is the cost of the customer's equipment, and a ground-source heat pump is a lot more expensive to install than a resistance furnace. For illustrative purposes—and my costs are not actual

examples—my illustrative example was that the cost of the ground-source heat pump was four times as high as the cost of the heating system with resistance electric heat. While those are not actual figures, Mr. Palmer might care to comment on whether I have the ratio somewhat close.

Mrs. Grier: OK. Does the example presume that, to get the extra, when you are adding a million or a thousand of them, neither the six million nor the 20 million extra kilowatt-hours requires any new source of supply?

Mr. Snelson: There is an assumption built in here, and I think this is what you are getting towards. The assumption that is built in my example is a very simple one, which is that the cost of new supply equals the cost of the average supply that is in the electricity rates. I have used five cents a kilowatt-hour for both average cost of existing supply and the cost of new supply.

That makes the example simple, but it is not necessarily. For instance, in the report of the technical advisory committee, table B-1, which is in appendix B, they have tried to explain the same point, that electricity rates may be higher but the bills may be lower, with their own simple example, which has more numbers in it than my example. They assumed that the cost of new supply was higher than the average cost of the existing system and they still show the electricity rate increase effect.

Mrs. Grier: If I may turn to the cost of the social and environmental requirements and the amount you say you have approved for fuel disposal and decommissioning of the nuclear plants, the \$468 million, what relationship does that hold to your actual experience with decommissioning? I know we have not had experience with fuel disposal. Have we decommissioned anything?

Mr. McConnell: Mrs. Grier, in this particular presentation Mr. Snelson was giving, we are trying to show the principles here that when we are evaluating an option, it is incumbent on us to include all of the costs. What we are really saying is that we have to include the costs of meeting the environmental requirements, and we have to include the costs associated with achieving public acceptance. What you are really talking about here, I think, is the validity of the amount of money that is allowed. I think that is what you are getting at. Earlier on, I offered to present to the select committee, if it so desires, a presentation on the subject of rad waste.

Mr. Argue: I have a brief supplementary on the same 11.2A. Would it not be comparable,

Mr. Snelson, on the utilization cost under the ground-source heat pump, to compare that figure to the supply cost figure under the resistance furnace?

Mr. Snelson: No.

Mr. Argue: Why would it not?

Mr. Snelson: We are presumably on figure 11.2 A-8. The whole principle of this is that to deliver the electricity service, the warm house, you need both the supply facilities that the utility needs, the generating plant, the transmission lines, the fuel and the people to operate the system, which are the supply costs, and also the utilization costs, which are the costs of the equipment in the customer's house. To deliver the warm house, you have to have both the supply cost of the utility system and the costs in the house to make it into a useful service.

In these two examples, the ratio between the supply cost and the utilization cost is very different. In the resistance-furnace case, there is a large investment and a large cost on the utility system to provide the power, because a lot of power is required, but the cost of the equipment in the house is very cheap, and that leads to one total cost.

In the other example, the cost of the utilities part of the system is very much less because the amount of power required is about one third or less than the other case. The supply cost is much lower. Much less investment is required on the utility system, but a much bigger investment is required in the customer's premises to make a very efficient heating system.

Mr. Argue: I will not disagree with you, but I think you have given the argument that I would have given on why I believe the supply cost and the resistance-furnace example is comparable to the ground-source-heat-pump example, because those are the capital-intensive sides of both options. One is done on the customer's side; one is done on the utility side.

1730

I would like your comments on what would happen, based on some of the representative plans you have looked at, if you were to continue and take a look at the utility supply costs, say in year 10, in comparison to the ground-source heat pump costs in year 10 when the demand option is depreciated over five years and the supply option is depreciated over 40 years?

Mr. Snelson: In principle, the way this calculation should be done is to work with a real cost of money, which ends up with an annual cost that has an equal real purchasing power in every

year. You will notice that in the analysis of demand options we have done, we use a utility type of discount rate based on the real cost of money of around four or five per cent per year. That avoids distortions between early years and late years in comparing costs. If you use that sort of economic evaluation, which we do, then you do not find a shift in the relativity as you go through the life of an option in this sort of evaluation. That is how the evaluations have to be done. It is different to the way in which accounting is done for electricity rate purposes.

Mr. McGuigan: Just going back to the heat pump, in addition to the high capital cost of a heat pump as compared to a furnace, it is my understanding that the heart of the heat pump is a refrigeration compressor and that they have a relatively short life. I think one could expect most furnaces—I am not too sure about electric, but I know with a gas furnace you could expect 40 years. I do not think you could expect more than 10 years from a compressor. Part of that cost differential is the fact you are going to get a lot of wear and tear and maintenance on the pump that you do not get on the furnace. Is that correct?

Mr. Snelson: That is correct. That should be evaluated as part of the utilization cost. If compressors need replacing every 10 years, then that should be taken into account in the evaluation and that becomes part of the utilization cost.

Mr. McGuigan: And explains those wide differences.

Mr. McConnell: Yes. When you are evaluating the supply cost, the operation and the maintenance of the supply facility and the fuelling and the capital cost all have to be included, as well as the environmental requirement. When you are evaluating the demand option, if you go for, say, the ground-source heat pump, you appropriately have to include the operating and maintenance charges there, as well as your interest and depreciation. All factors have to be considered in both options.

Mr. McGuigan: The point I am trying to make is that when you buy a heat pump, I do not think many people are prepared for the fact they have to buy it again 10 years or 12 years down the road.

Mr. McConnell: That is right and that is where we get into what is called the disincentive for the customer to go it alone. Through these incentives, you are trying to overcome the resistance on the part of the customer to do it himself.

Mrs. Sullivan: I have been asked by the chairman to be short. However, I think I am following just exactly where we left off here. When a customer makes a choice about moving into a demand management option, frequently the capital costs are high or higher than they would be if he were using an old system that was supply-based. When Hydro is looking at the incentives, I wonder if it is looking to provide incentives that would be equivalent to equalize the cost factors for the options that would be available.

Do you understand what I am saying? If it is going to cost more with the new method when we do not have something other people can see, like the blue box at the curb, it seems to me the incentive has to be high enough to make it at least equivalent to the old choice. Are you looking at that kind of replacement value in your incentives?

Mr. MacCarthy: That is one of the options. If I can use a simple example like an energy-efficient motor and a non-energy-efficient motor of the same horsepower rating, and the energy-efficient motor is typically a higher cost in that situation, what we are looking at is not a full coverage of the differential but a proportional coverage, because there will be some savings in terms of the energy bill the customer will ultimately face. We will try to provide an incentive sufficient to induce them to make that move, but no more than we have to to make such inducement take place.

Mrs. Sullivan: This may just be right off the top of the head, a conclusion that is not merited, but it would seem to me that, by example, a \$500 utility incentive on an \$8,000 capital cost heat pump is not going to be very attractive for a residential consumer. On the other hand, those kinds of incentives are of an equivalent value given the larger use of electricity, and maybe indeed more attractive for industry.

Mr. MacCarthy: That is one of the things we are looking at.

Mr. Snelson: I think you may be misunderstanding the example a little. The example was worked in annual costs and the annual cost of the ground-source heat pump was \$800 a year compared to \$200 a year for the resistance furnace.

Mrs. Sullivan: Does that not include the amortization of the capital equipment?

Mr. Snelson: Yes. The incentive is evaluated as \$500 per year.

Mrs. Sullivan: That makes it better.

Mr. Snelson: Yes. The incentive in this particular case is covering five sixths of the extra cost of going for the efficient option.

Mr. MacCarthy: My comment to Mr. McConnell—I said that was a pretty high incentive.

Interjections.

Mr. McConnell: He was not around when we were working this out.

Mr. South: You indicated quite some time ago that Hydro consumption goes pretty well a third, a third and a third—a third residential, a third industrial, a third commercial, something like that. There seems to be a lot of merit in encouraging the residential end to conserve because very often they are not producing anything other than satisfying their own mental image of how comfortable they should be. With a lot of us, there is a lot of self-indulgence. I go back to my discussion with Mr. Palmer before.

I think there is a lot of merit in having a reverse rate for residential customers, determining what an average household should use. Again, to get away from the guy who is going south in the winter, do it on a monthly basis. Then charge a higher rate if you use above that.

I think all of us tend to be a little self-indulgent and a little undisciplined. Going back to what Mrs. Grier was saying, we have to think about creating a dirtier atmosphere and taking a little greater risk with all the options that seem to be open to us now. Was that discussed a lot? Are there any proponents in Hydro for a reverse rate? You go the other way.

Mr. MacCarthy: There are a couple of points. One, I think our underlying principle is a tracking of costs. Once you get into a social judgement that if you are using 1,000 kilowatt-hours a month, you are doing it inappropriately and Mr. McGuigan is doing it correctly, then you are really getting involved in a whole social judgement area.

Mr. South: It would not be a judgement, though, if you took the average household consumption of electrical energy—that is not a judgement—and said: "This is what the average household uses. If you use above that, you are slothful and we are going to charge you accordingly."

Mr. MacCarthy: But is that the average household with two children or is it four children?

Mr. South: It is the average.

1740

Mr. MacCarthy: A bungalow, a two-storey home, a handicapped child—I guess there are not very many advocates of the position.

Mr. South: I find that interesting. I think one of the problems our society faces is that we allow all of us to be too self-indulgent and we do not really realize the implications, such as the environmental implications Mrs. Grier is talking about. It is easy to be self-indulgent and to think, "So what?"

Mr. MacCarthy: If I can add just one other point which perhaps addresses a portion of your concern, we are moving and are proposing movement towards time-of-use rates, so that if you are going to be contributing to the system by adding additional costs, then you will pay more at that time. There will be a penalty associated with adding additional costs to the system in total. That is as far as we have gone at the present time.

Mr. Palmer: I wanted to say to Mr. South that one of the most energy-intensive businesses is farming. There is a lot of energy in the production of fertilizer, in running equipment and so on. It seems to me that your thesis leads to the suggestion that at the supermarket fat people should pay more for food because they have been overindulgent. It is the same kind of argument.

Mr. South: If we are talking about farming, we are producing too many surpluses anyway.

Mr. Palmer: But it is the same issue.

Mr. Charlton: Could we just very quickly get back to the beginning of the illustrative example and the utility incentive. We started to have some interesting comments there and then we shifted gears away from it.

You have two basic proposals here, one which, for the consumer in terms of the utilization cost, has a much higher capital outlay at the outset. Even with that, without any incentive, you still have a better bottom line on the ground-source heat pump. How are you approaching the question of incentives? How do you judge when an incentive becomes necessary beyond just basic bottom-line information to consumers?

Mr. Snelson: Perhaps I can deal with that as it relates to this example, that this is an annualization which would be based on a real discount rate, as we told Mr. Argue just now, which might be four per cent or five per cent per year.

No customer can actually go and borrow money at four per cent or five per cent per year to put in his ground-source heat pump. He is going

to pay at least 10 per cent per year with the current situation. He may very well not see a better bottom line in the first year. He might see a better bottom line averaged over all the life of that heat pump, however long it lasts. But because of his view of capital costs, he will probably think of it as a higher cost in the first few years of the option. That is a significant barrier to the implementation of the long-term, economic, energy-efficient option from a total societal cost perspective.

Mr. Charlton: I think I understand that part of it. I guess what I was trying to get at is, when you are trying to look at both a demand management program and, therefore, an incentive program Hydro might have to get involved in, in order to make the demand management program work at whatever level you are trying to reach, how do you determine what the incentive should be and how much of an incentive you have to make? In this case, as you have said, you basically are providing five eighths of the utilization cost. How are you approaching that question in terms of determining what is required?

Mr. Palmer: I think you would first look at a particular demand option and weigh it against the supply option you might have to build if you did not introduce that demand option. That provides you with a maximum basis for the cost of the demand option to the utility, so that gives you a ceiling for it.

What you would probably do and what we have been trying to do is to run some test markets and so on and test a variety of options to see which level would tend to generate the market, along with information and all the other things. That is the kind of practicality of deciding.

Mr. Charlton: What I was getting at, though, is that in the initial discussion there you very specifically set out one of the disincentives to this demand management program. Without your incentive, the disincentive is the cost of money. Would that not be the first place you would look for your incentive, "How can we help this consumer eliminate the disincentive that is directly associated with the cost of money?" as opposed to just putting on a flat rate, \$500 out of the \$800 or whatever?

Mr. MacCarthy: That is one of the options, in fact, that we are currently pursuing, where we will offer a lower-interest loan for an energy-efficient application. That is one form of incentive.

Mr. Charlton: The reason I asked the question is that obviously, in terms of the fact

that in any given program you may or may not have some losers, and you likely will have some in a specific program, if you take out the incentive altogether, in this specific example, the energy rate, the per kilowatt rate, is identical.

Mr. Snelson: Yes.

Mr. Charlton: The only difference in the rate is your incentive.

Mr. Snelson: That is correct.

Mr. Charlton: So the more appropriate or the more targeted the incentive is, the better off the bottom line is going to be on any particular demand management program.

Mr. Snelson: We have a number of strategic statements which are relevant to how you choose the financial incentive. Essentially, there are four of them. To some degree, they pull in opposite directions, so they are going to end up with tradeoffs. The first one says that the incentive should be high enough to make a large proportion of the economic potential happen. Essentially, the first one says make the incentive large enough that the customer will choose that option.

The second one says that the customer who benefits from lower electricity bills should pay part of the cost. We should not provide an incentive for all the costs if it is going to lower his electricity bill and lower the amount he uses, because clearly it is part of the customer's responsibility to do that. We want customer commitment to the options, the customer's commitment to use it when it is provided. We are looking for a customer contribution where he benefits.

Then there is the issue of rates, which is dealt with via the statement that says the level of incentives should be acceptable to customers in general. There we are thinking about the rate impact of the financial incentive programs in total.

The last statement says that financial incentives should look at the lifetime cost of the options when we are making the decisions and that we may choose to front-end-load our incentive payments so as to make it attractive to the customers in those early years, when it looks difficult from a financing point of view, and that would give us the greatest effect for our financial incentive. That might be through a subsidized loan or some other such arrangement that makes the front-end cost look affordable to the customer and encourages him to do that.

Mr. McConnell: I think that perhaps we have moved from Mrs. Grier and Mrs. Sullivan being the straight women to Brian Charlton being the straight man.

In this particular presentation, what we wanted to do was to make sure this committee has a very clear idea of what we meant by total customer cost and we gave this example. Unfortunately, in giving this example, it induces a whole bunch of other questions because your mind runs ahead to the next one.

We do have a presentation under block 3, demand management, in which we deal specifically with the question that Mr. Charlton has just raised. That has to do with some of the principles and the application of the financial incentives. If I may, I would like to put off that question until we make that presentation.

Mr. Chairman: Is that acceptable?

Mr. Charlton: Yes.

Mr. Chairman: Are there any further questions? Seeing none, I will adjourn the committee until 10 o'clock tomorrow morning. I remind the members that for those who wish, there will be a brief in camera meeting at 9:45 tomorrow morning in room 230, next door.

The committee adjourned at 5:51 p.m.

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SELECT COMMITTEE ON ENERGY

Chairman: Carrothers, Douglas A. (Oakville South L)

Vice-Chairman: McGuigan, James F. (Essex-Kent L)

Brown, Michael A. (Algoma-Manitoulin L)

Charlton, Brian A. (Hamilton Mountain NDP)

Cureatz, Sam L. (Durham East PC)

Grier, Ruth A. (Etobicoke-Lakeshore NDP)

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Ray, Michael C. (Windsor-Walkerville L)

Runciman, Robert W. (Leeds-Grenville PC)

South, Larry (Frontenac-Addington L)

Sullivan, Barbara (Halton Centre L)

Substitution:

Dietsch, Michael M. (St. Catharines-Brock L) for Mr. Brown

Clerk: Manikel, Tannis

Staff:

Argue, David, Consultant; with Passmore Associates International

Witnesses:

From Ontario Hydro:

McConnell, Lorne G. W., Vice-President, Corporate Planning

Palmer, Hedley C., Director, Market Services and Development

MacCarthy, Dane B., Vice-President, Energy Management

Snelson, J. Ken, Manager, Demand/Supply Integration



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Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy

Electricity Demand and Supply



First Session, 34th Parliament

Tuesday, August 9, 1988

Speaker: Honourable Hugh A. Edighoffer

Clerk of the House: Claude L. DesRosiers

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Tuesday, August 9, 1988

The committee met at 10:10 a.m. in room 228.

ELECTRICITY SUPPLY AND DEMAND (continued)

Mr. Chairman: If I can call the morning session to order, we will turn off the air-conditioner and get under way.

Just before we get into this morning's presentations, as we are having some difficulty, with so much to deal with in the short span of time we have, I am going to suggest that the committee consider extending its formal hearing times a bit. I would like to propose that we start at 9:30 in the morning. We can then go through to 12, break for lunch and start the afternoon at 1:30. If we then break at three o'clock for half an hour, pick up again at 3:30 and go until six o'clock, that will give us about five to five and a half hours of sitting time with, I think, sufficient breaks that we are not going to exhaust ourselves and it will perhaps add a little more time in the next three days for us to cover all of the topics.

Does that meet with the general agreement of the committee? Is there any discussion on that? Seeing none, I will assume that everybody agrees. We will have extra coffee laid in and make sure there are chocolate milk, cookies and everything.

That means this afternoon's session will pick up at 1:30 and go to three o'clock. We will break for half an hour, start again at 3:30 and go until 6 p.m. Then we will start again at 9:30 tomorrow morning.

I believe we are picking up with item 2.2. Is that right, Mr. McConnell?

Mr. McConnell: That is correct, yes.

Mr. Chairman: I guess, Mr. Rothman, you are going to be presenting the next session?

Mr. Rothman: Yes.

Mr. McConnell: We have two presentations to make on the response to uncertain growth, the first one discussing the load forecast bandwidth by Mr. Rothman and then the next two items. Ken Snelson will talk about the contingency plans and our commitment to the median growth.

Mr. Chairman: Why do we not go through both of those and then take questions after? Perhaps they present a logical package of information.

Mr. McConnell: They do, yes.

Mr. Chairman: Perhaps the members could hold their questions, unless they want some very specific point of clarification during the presentation, as has happened. If we could hold general questions until both Mr. Rothman and Mr. Snelson have made their presentations, that might ease the procedure.

ONTARIO HYDRO

Mr. Rothman: My presentation this morning deals with strategy element 2.2.1, which specifies that the load forecast will include upper and lower projections. I am going to talk more generally, though, about quantifying uncertainty, about how we deal with uncertainty.

There are two possible approaches, or two ways that we use, anyway, to quantify uncertainty. One is the bandwidth, and I am going to spend most of my time this morning talking about the bandwidth. The second is scenarios, which I will talk about towards the end of my presentation this morning.

This is the first of the two presentations, as you have heard, dealing with how the DSPS takes uncertainty in the load forecast into account. The thrust of this strategy element is that the load forecast will include upper and lower projections that cover a reasonable range of possible outcomes. In fact, that is the statement of the strategy element. Once you have that, what do you do with it? Hydro does intend to plan to the full range of future outcomes, with an emphasis on the median but with contingency plans available for the entire range of outcomes identified.

As I said in my earlier presentation, recognition of uncertainty is an integral part of a load forecast. We cannot make a straight-line load forecast and say, "This is the only possible state of the world." We have to be able to plan for uncertainty, because we know there is uncertainty. We know we cannot forecast the future. There have been times when economists and others have been more arrogant than we are now, but as with all arrogance, experience proves us wrong. Having learned that, we have learned that we have to be able to understand, or try to understand, what the sources of uncertainty are and how it will occur in the future.

As I said, we take two ways of dealing with uncertainty. Maybe that is overkill. Anyway, we take two somewhat independent ways of dealing with uncertainty. The first is the statistical bandwidth and the second is the load scenarios.

Let us look again at a forecast bandwidth. This is a rather abstract bandwidth. It does not have any numbers on the vertical axis, and it does not have the median forecast. It simply illustrates the concept. The concept is that between these upper and lower bounds, we have a range of possible outcomes. In fact, we have an infinite number of possible outcomes in terms of the load at any given point in time. What we do is assign a probability to that bandwidth. We say there is some probability of the actual load falling within that bandwidth. The statement that we make about the bandwidth is that there is a 60 per cent probability of falling within that bandwidth. That is our current estimate for that bandwidth.

Let me go back again and talk about uncertainty. Where does that uncertainty come from? What are the sources of uncertainty in the load forecast? They really come from uncertainty in the factors that drive the load forecast, uncertainty in the economy and the other economic factors that tend to drive the load forecast, in terms of population growth, for example. Population growth is typically pretty stable. It is a relatively small number, it depends primarily on the number of births and deaths and it does not change very rapidly. But over the last two years, in fact, we have seen that rapid changes in migration patterns have had a significant impact on population growth in Ontario. So even population growth, which had been one of the more stable factors driving electricity demand, has become more uncertain.

We know that economic growth is uncertain. Of course, oil prices have been very volatile over the last 15 years. It is quite a risky business to predict where oil prices will be next year, much less in the year 2000. Oil prices affect natural gas prices, which affect electricity's competitiveness. All of those underlying factors contribute to uncertainty. In fact, there has been research that tends to suggest that roughly 70 per cent of load forecast errors in the past—this is not our research; this is just general research in the United States—can be attributed to errors in the underlying economic forecasts rather than errors in the translation from the economic forecast to the load forecast.

But there still is uncertainty in that translation. There still is uncertainty in electricity intensity and how much electricity will be needed or

demanded for each unit of output. Various kinds of short-term influences, like the effect of an economic recession on the energy-intensive industries such as pulp and paper or metal mining, can make the electricity intensity deviate from a long-term trend, but only until the recovery comes. It may be for a few years, but only until they recover. On the other hand, changes in household and usage patterns and behaviour could create a long-term deviation. It is very difficult to distinguish between those in the short run.

Let us go back again and look at the bandwidth itself, this time with some numbers on it. It suggests that we have a 60 per cent probability of being between the lower and upper bounds as shown there, a 20 per cent probability of being above the upper bound and a 20 per cent probability of being below the lower bound.

This bandwidth is computed on the basis of past forecast errors. It is computed statistically, assuming that the future is no more uncertain than the past has been and that we are no better forecasters, and no worse, than we have been in the past. That still leaves us with a fairly wide range, and we have been looking at other ways we might estimate that bandwidth.

1020

Essentially, maybe we are not giving ourselves enough credit. The Ministry of Energy in its review said, "You know, you have got better methodologies now." We think especially that government policymakers have learned some lessons from the 1970s—in particular, federal government policymakers all over the world and monetary policymakers—and maybe we will not have a repeat of the 1970s; so maybe we should not be giving as much weight to the past as we currently are.

We are investigating forward-looking approaches. Basically, these approaches require estimating bandwidths for the important drivers: the level of economic activity, energy prices and the electricity/gross domestic product ratio. We do not assume that past stability will not recur; we assume it is less likely than our historical errors methodology implicitly assumes.

We have not yet completed that investigation. We have not yet seen whether we can apply those techniques to Ontario. They are techniques that have been used elsewhere and they may not be appropriate here. We also have not fully decided—maybe it is I who have not fully convinced myself yet—that we should be discounting the period of the 1970s. But that is an investigation

that we are currently undertaking and we expect we will have results of that fairly soon.

Finally, scenarios: A scenario is an alternative forecast; it is a complete other forecast. It contains a complete forecast, all of the forecast variables, based on some alternative assumptions about what starts it in the present. Typically, those alternative assumptions involve different assumptions about government policies in the present. We have two scenarios, the higher productivity and deflation scenarios, that come actually pretty close to the upper and lower bounds. The load growth scenarios derived from those economic scenarios approximately track the upper and lower bounds of the 60 per cent bandwidth, and they were used in the analysis of representative plans and the development of the DSPS.

That is the end of this rather short presentation. I have simply talked about how we quantify uncertainty, why we have to quantify it, where it comes from and both how we do it now and a few ideas about how we might be changing that in the future.

Mr. Snelson: Continuing on, my presentation is to build on what Mr. Rothman has just told us about how we intend to develop uncertainty bounds and to consider how we deal with those in planning in a conceptual sort of way. I am not going to talk about any detailed processes, because some of those are evolving, but I am talking about the strategy elements and some of the concepts that will go behind that.

The actual strategy elements are that contingency plans must be prepared that identify practical options to respond to upper and lower load projections. Then when you are coming to the actual commitment decision where you start to place big money into an option, demand options will be implemented and supply options will be committed in time to meet the most likely load growth economically and reliably.

Mr. Rothman has talked about the bandwidth. This is one of his bandwidth forecasts from about the time we started the DSOS, and this just illustrates that for the last little while we have been tracking nearer his upper bound than the lower bound, so clearly, these upper and lower bound projections can happen. If I had gone back another 10 years, then I might have shown a slide that showed us tracking nearer the lower bound than the upper bound of the forecast that was prepared at that time; so it can happen both ways. It is important that planning should have flexibility to adjust to load growths that are either

higher or lower than the median forecast as described by the bandwidth.

Load growth is clearly one of the biggest uncertainties we face. Maybe it is the biggest uncertainty we face, but it is not the only uncertainty that is significant. Some of the other factors that are uncertain include the performance of the existing system. A dry year reduces hydraulic output. We have had that in the last year or so. A nuclear plant or a coal-fired plant may experience mechanical problems.

So the performance of the existing system is uncertain. The time taken on the supply side to get new approvals for new plant is very uncertain, particularly at this time. We have not completed an approval process for a generating plant. We do not know exactly what that will involve as we go through that.

There are uncertainties on the demand side in terms of both what the technical potential is and how much of that potential can be achieved in the real practical world with the incentive programs and so on that will be offered. There are also uncertainties about independent generation as to how much response you will get when you make an offer and perhaps seek bids for independent generation. How much will be offered? So there are some uncertainties there as to both quantity and price.

There are uncertainties in the environmental requirements. We can plan to meet the requirements that exist at the moment, but it is difficult to plan to meet the requirements if you do not know what they will be in the future. We do not know what the environmental requirements will be perhaps in two years. Certainly, we do not know how stringent they will be in 10 years. Planning should have flexibility to cover these contingents, as well as load growth. I am giving you a very simplified idea, but I hope it gives you some background as to how we can plan to meet a range of uncertainties.

We will always have a base plan that is designed to meet the median growth economically and reliably. That will not be the only factor that goes into its choice, but one has to have that. For flexibility, you will want to know how that can be developed into a plan to meet the upper contingency—upper growth—or have lower growth.

The considerations of upper and lower growth will affect what you put into your base plan because at this particular point in time and for the next little while, you certainly do not know which of those paths you are on. Your actions have to be consistent for all three possibilities.

After a period of time, as the experience starts to develop, then you do get some information through actual load growth as to which sort of path you are following and you can adjust your decisions accordingly.

We have in planning a specific meaning to the word "commitment." That is what this bottom half of this slide deals with. When we start an approval process for a new generating plant, within our own terminology that does not mean commitment. That means that one is going out and trying to keep the option open. One is getting the approval processes and so on. Within our terminology, commitment occurs after you have approvals; it is at the point at which we as the planning division tell the construction people, "Go ahead and build it." At that point, major financial commitments are made, orders are placed for major components and a start is made on digging a hole in the ground so that you can pour concrete. The major expenditures start to flow at that time.

We have considerable flexibility to delay any time up until that point of commitment. After that point of commitment, then we still can and do adjust the schedule of generating plants and so on, but it does start to become more expensive because financial commitments have been made.

When it comes to commitment, we are saying and our strategy says that the commitments will be based primarily on meeting median growth. As a minimum, the commitments will be made to ensure that with median growth a reliable system can be maintained. But there will also be considerations of economy and these will influence commitment decisions. Economic evaluations will include probabilistic assessments of expected cost over a range of load forecast possibilities. These studies aim to produce the lowest expected value of total customer cost, which we could call a least-risk cost process. In our planning, we do attempt to take into account the probabilities and expectations of loads being different to the median forecast.

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What sort of options would we choose for the median growth? No long-term costs will be important. Balanced system development will be important. A plan that provides balanced development of low long-term cost options will provide a good system if the load growth is as expected. Such a plan will also provide a good base to adjust to higher or lower growth.

For higher growth, reliability can be maintained by adding higher-cost, shorter-lead-time options, such as combustion turbine units, which

could be built quicker. If the base plan has economical options in it, then the resulting system with the upper growth will not have an unmanageable proportion of high-cost options in the system. For lower growth, plans will be delayed or cancelled if time permits. There are considerable time periods between starting an approval process and getting to commitment where that can be done at very little cost.

If, for some reason, you do get into a situation where commitments have been made and surplus capacity results, economical options in the new plant permit old uneconomical plant to be retired. They also provide flexibility in terms of being able to export a surplus if you have it. These were the sorts of things we were able to do in the late 1970s and early 1980s, when we did get into a surplus capacity situation. Then the economical options served us well and we were able to manage the surplus without rate increases substantially above the rate of inflation.

What sort of things will we do to cover off upper growth? Some of these actions are things we would do as the load growth develops. Some of these things are things we might have to start now. We would clearly try to accelerate demand options and strategy element 3.6.2 requires us to carry out technical research and market demonstration programs for potential new demand management programs.

With higher growth, there will be higher-cost supply options in the plan. The higher-cost demand options will be affordable and we should be able to get more demand options that are economical compared to the higher-cost supply options.

Nonutility generation programs will be accelerated, with higher-cost supply options than the avoided cost of what we would have to do on the system. The supply is higher and we could pay more for independent generation and we should get more.

There are high-operating-cost plants, such as Hearn and Keith, which are presently sitting idle. If we really knew what the future was and we could plan for it with certainty, we would probably retire those plants because they are not economical resources in the future for the long term. A cheap strategy to meet the upper growth is to mothball those plants now; just put in a minimum amount of money to stop them rusting away and then they are available in case the load should turn up unexpectedly. That is one of the faster options of getting capacity on to the system.

As far as purchases are concerned, maintaining the interconnection capacity is important for flexibility for both high load growth and low load growth. In the high load growth case, having the capability to bring in power from other systems is a flexibility that might be very important to you even if long-term firm purchases from other systems are not available because they have high load growth, too.

Other things you can do that you might have to do now to provide the flexibility to meet upper load growth is that you can do some of the preparatory work for the things you are going to do for the median projection early. That is a very low-cost way of providing some flexibility to accelerate.

There are short-lead-time options. There has been a lot of talk about integrated gasification combined cycle, which can be built in modular terms and is something we are very interested in. If that is seen as an option for the upper growth, you may have to do some preparatory work on that now, even though it may not be required in the future if the load growth follows a most probable path.

Those sorts of insurance types of actions start to become expensive. You will look for the shortest-lead-time options and you will not be so interested in low long-term cost. You will want short lead time and you will want very low emissions, because in the high-load-growth scenario you are going to be pressed to meet the acid gas emission regulation, so you may institute some preparatory work on things that are done as an insurance measure. Of course, in general, anything you can do to shorten lead times and approval processes and construction time helps with the flexibility to meet upper load growth.

When it comes to lower growth, some demand management programs would be continued because they make economic sense when they are efficient, whether the load growth is high or low. Other programs may end up being delayed or not renewed because they cease to make economic sense in a period of surplus capacity when costs are lower.

As far as purchases are concerned, long-term firm purchases arranged to meet the median load growth may have to be continued to meet contractual commitments, and it may not be possible to delay them. With our Manitoba contract, which we have signed, we have a clause in that agreement which, if the load growth in our system is very low, does allow us to not continue with that contract subject to a penalty payment,

so there is a clause to get out of that with a penalty if the load growth is very low. Another case is that you may be able to go ahead and renegotiate the contract, provided the other party is willing to do that.

As far as the projects for the median growth are concerned, we do have a statement in our strategy that says we will make one or two unit commitments in multi-unit stations. That is a strategy that is specifically there to give us flexibility for lower growth, so that we do not end up committing four units in a multi-unit station all at one decision and then end up regretting it because the load growth has turned out lower. This allows us to make incremental decisions.

For things that are under way, obviously you will have to face up to the decision of whether you continue. If the load growth turns out to be low, do you continue, do you cancel or do you defer? In many cases, you will be able to cancel options or defer them. Certainly, if you are not past the point of commitment and even if you are just part-way into a project, then deferring is something we have done in the past and we would do again in the future.

As far as high-operating-cost plant is concerned, if you do end up with surplus capacity and if your new capacity is fundamentally long-term economic capacity, then you have the option with the surplus of shutting down some existing high-cost plant. That is how we came to shut down Hearn and Keith and how we shut down Lennox for a while. You have to consider, if you shut plant down, whether to mothball it or to retire it. As I have said, consideration for the upper growth tends to say do not retire it unless it has really ceased to be functioning; mothball it so that it can be used for upper growth.

Again, one of the strategies for dealing with lower growth involves the interconnections. You need to maintain interconnection capacity in case you have too much generation because that then gives you the opportunity to make export sales. The more economical the generating plant on our system, the better chance we have of selling any surpluses we might end up with in a low growth situation. As far as lead times are concerned for lower growth, the main emphasis has to be on shortening construction times.

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To summarize, we plan to the bandwidth forecast. We need to recognize these uncertainties in our planning. The principal uncertainty is load growth but we recognize that other uncertainties are important. For instance, they were addressed in the representative plan analysis.

The actions that are taken to provide flexibility to respond to uncertain load growth will also provide flexibility to respond to some of these other uncertainties. Our plans will include contingency plans to meet upper and lower growth as well as a plan to meet median growth. Our commitments will be based largely on providing reliable, economical supply to the leading load forecast.

Mr. Charlton: It would seem from what is set out in Meeting Future Energy Needs: Draft Demand/Supply Planning Strategy and what is being said to us in the two presentations this morning that there has been a fair bit of change in the last two years in the approach to the forecasting question and the uncertainty. But one thing that does not seem to have changed is the approach of Hydro's longer-term view of forecasting, maximizing the range of uncertainties over a long period of time.

I recall two years ago, for example, when we were discussing some of the demand options, specifically a discussion we had around cogeneration where the view was expressed, and I cannot recall which of you it was—it was probably one of you—that a lot of the demand options were not reliable in the sense of the kind of discussion we had yesterday about reliability.

It seems that view has somewhat changed in some of the things that are expressed in the DSPS document. For example, in chapter 8, pages 8 and 9, under "Lead Times and Flexibility," there is a basic statement which in effect, it seems to me, is a major step forward from the kinds of things we were hearing from Hydro two years ago. "The demand options clearly have the shortest amount of time elapsing between when money is spent and when the benefits begin to show up in reduced demand for electricity." You are in effect saying there that demand options, although they have lead times, are the fastest ones you can bring on stream. I will not read the whole paragraph, but it concludes by saying, "However, once the programs are in place, demand programs have considerable flexibility to match the growth in demand for electricity."

It would seem to me what that statement is saying is that your demand options are the options that have the greatest potential to reduce the uncertainties we just talked about in terms of load forecasting. In that respect, does it make sense to continue to try to do the kind of long-range planning you have done in the past, because of long lead times for large plants where you are ending up with a projection that has such

a wide band at the far end of it that the range of uncertainties is, for want of a better word, huge?

Does it make sense, as we move into the demand management techniques we have been talking about for the last week, to start looking at shorter planning periods, and therefore being able to reduce that spectrum of uncertainty you are looking at?

Mr. Rothman: I think others will want to respond effectively to the back end of that. Let me start with the front end of it and just say that demand options have with them a fair amount of uncertainty too. We do not know how effective they will be. We do not know how much takeup we will get. When we look at utilities in the United States that have done demand options in large scale, there have been some successes and some that have not produced anything like the results that were expected.

Once you do a demand option, aside from the problems of measuring what its effect has been, because there are lots of problems with that, there are problems up front of knowing how successful it is going to be and how long it will take. It is a relatively short time before it starts having some effect, but it takes a long time—or longer, certainly—to get the kind of effect you need to be able to rely on it as a significant contributor to the reduction in load.

That is really in Mr. Snelson's and Mr. Marriage's area more than mine. From my viewpoint, I am charged with the responsibility of forecasting the effect of demand management on the load. I am having enough trouble trying to figure out how to do that. We will have an answer for Mrs. Sullivan soon, I hope, and for the committee of course. I have not even started to think about how we address the problem of uncertainty within that part of the forecast, but there certainly is some.

Mr. Charlton: I do not think I was trying to say that you ever eliminate uncertainty. What I was trying to get at was that we have been talking about this huge range of uncertainty for some years now, and other jurisdictions, as they move into new ideas, have tried to look for ways to reduce the range of that uncertainty in their forecasting.

Maybe what you should be telling me—I do not know; I do not know what the answer to this is because I am not an expert, obviously, on demand forecasting and I am certainly not an expert on the techniques they have used to try to reduce the range of uncertainty. You are still taking the same basic long-range planning approach you were taking in the past when for all

intents and purposes the only thing you were looking at or 99 per cent of what you were looking at was supply options to deal with your forecast. Because of the lead times for nuclear and so on, you basically had to be doing a 15-year to 20-year planning look. It takes you that long to put a nuclear plant in place.

Are there options in the future that will alter the way we approach forecasting so that we can reduce the range of uncertainties we are faced with in a planning context, and in a commitment context ultimately?

Mr. Mrthman: There may be in a forecasting sense, but I leave it to Mr. Snelson and Mr. Marriage to talk about what those options might be and how we would look at them.

Mr. Snelson: One area where your question has some validity is that if the results of our studies had been that there were more than enough short lead-time demand management and independent generation options to meet our requirements for the future, then maybe we would not have to look at longer lead-time options and one could shorten one's planning horizon. But given the range of needs in the future and the range of amounts that are likely to come from demand management and independent generation on the short lead-time basis, our conclusion is that we still need to be looking at at least the possibility of the major supply options. We cannot rule those out of our planning processes.

Mr. McConnell: Just to add to the first part, the question of demand management uncertainty, Mr. Charlton, we will be making presentations to you that are more dedicated to that component of demand management that has to do with load shifting.

Speaking as one person, I have a great deal of confidence that we will achieve the load shifting objective. In our presentations we will be indicating to you that there is an upper limit beyond which you cannot go. Our target is to achieve that upper limit so there is no more in the well. We have a lot of confidence in that area.

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In terms of electrical efficiency, the world is indeed more uncertain because as this century has gone on, there have been many new technologies developed by engineers that offer greater efficiency and there has been very dramatic progress made on energy efficiency during the whole of this century. By far the greatest improvements in electrical and energy efficiency occurred in the first half of the century

because the opportunities were so great, but when you get yourself into a situation where the efficiencies are already high, you have to work that much harder in trying to squeeze out those extra efficiencies.

Some of the targets and forecasts we have made with regard to electrical efficiency improvements are for technology that is not yet invented. You cannot talk about that materializing in the next two or three years. We have longer range targets for electrical efficiency improvement based on the fact that we are going to continue with our research and continue to develop ideas. Inherently there is some uncertainty associated with such assumptions.

The risk that Mr. Snelson talked about is that if you have already put into your plans assumptions that something is going to happen, then you become at risk if they do not happen. The demand management programs, although they have the advantages that you described—and that is true; they do—at the same time, they are not quite as certain as a supply option. For example, if we decide to build four units, we may be a little bit early or a bit late, but on the other hand, we have little doubt about what the megawatt rating will be when they arrive and that they will provide a supply for quite a long time. There is a variety of uncertainties and different natures of uncertainties that we have to consider in our process.

With regard to the magnitude of the demand management options, I think in the numerical data we have already presented and which we will be clarifying as we go along, we do not really eliminate the need for the supply. Those longer lead times are things we still have to do long-range planning with. We may be able to do a job more efficiently but if there still remains a net growth, we still have to grapple with those same kinds of problems we have had in the past.

Mr. Charlton: Understandably true. I think there is also no question though that the more successful you are with the demand management side of the equation, the smaller are the supply-side options that you will have to look at, and you also therefore reduce lead times, uncertainties and all the other things we have talked about.

Mr. McConnell: I would like to bring you back to the commentary I made on Thursday of last week in which we indicated that with the replacement that could well be in the order of 500 megawatts a year during the first decade of the next century, together with the probable supply having to do with growth after we have allowed

for nonutility generation and demand management, our expectation is that the acquisition program will probably be the largest in Ontario Hydro's history. So I think you have to temper your statements about not doing a long-lead-time planning on the basis of that kind of reality.

Mr. Charlton: No, I think I hear what you are saying and I think it goes back to what was set out by the president and acting chairman in his opening remarks to the committee.

I think it is reflected in the kinds of comments you made just now where you start to hear the uncertainties again about the demand management side and the kinds of what I suggest are contradictions that are spotted throughout the DSPS document where you have statements like the one I read earlier, which is not a pessimistic statement at all and it obviously came from somebody in Hydro, where we have a very concrete statement that once you have demand programs in place, they are very good at tracking demand—high, low. Then you have another statement two chapters later on where it says: "As has been said before, demand management is very uncertain and we don't know what we can get or when we can get it."

It just reflects the change that Hydro is going through and, in fact, the divergence of opinion internally within your own expert staff about what the real bottom line is in terms of the future.

Mr. Marriage: I think both statements are true in terms of uncertainty, as we have said, and in terms of what we can achieve because it depends on the customers as well as us. But also, because we are dealing with smaller quantities, it does provide a better way to track the load. You have a finer adjustment in terms of—and with a multitude of programs, you can also track the load a little better. So, I think both statements are true in themselves.

Mrs. Grier: Demand management and non-utility generation heads the list of flexibility options for both the upper growth and the lower growth. Your belief that they can be accelerated or decelerated rapidly is obvious from their nature. But if that is an integral part of your planning and your approach to both demand management and nonutility generation, is that in itself not going to be an inhibitor or a disincentive to co-generators, for example, to get into agreements with you if they know that they are going to be the tap that is turned on and off first?

Mr. McConnell: Mrs. Grier, let's take the nonutility generation first. If Ontario Hydro has entered into an agreement with the nonutility generator that we will buy a certain number of

megawatts, let's say for the sake of argument that it was in the contract for 25 megawatts, and let's say, for example, that it had an expected capacity factor of say 60 per cent and that we enter into a contract for certain price conditions that we will buy that power, and let's say for the sake of argument that the contract is for a 10-year period. Then let us say that the load growth turns down. We would honour that contract. If we have entered into that contract, we would honour that contract unless we negotiated with that party some alternative arrangement.

In the same way, if we have entered into an agreement with Manitoba or Quebec to buy power a certain amount at a certain time, we would honour that contract.

If we in Ontario Hydro got a reputation for entering into agreements that we did not honour, then of course we would be in a very difficult period.

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Mrs. Grier: I was not suggesting that by any stretch of the imagination.

Mr. McConnell: No. When we talk about flexibility associated with nonutility generation, if we saw that the load was going down, or was not rising, we would then take the action of not going out and entering into new contracts. In fact, the flexibility is not to enter into new contracts.

If we have power plants that we are building ourselves, rather than nonutility generators, we have more flexibility because we can slow those down, whereas if we have a contract with another party we have to honour it. In some respects, NUGs offer a flexibility that you do not enter into more agreements, but they have less flexibility in that you have to talk to another party to try to negotiate yourself out of it.

Mrs. Grier: It is not interruptible contracts that you are always thinking of in these two areas?

Mr. McConnell: No; no way. It is a two-way street. If we are going to in fact have the province of Ontario depend upon nonutility generation in the future, we have to have some contracts with people in which we would hope that they could be trusted to deliver the power we have entered into an agreement for. This is a very serious business.

Mrs. Grier: When you are going to go on the lower-growth road, what kind of a time frame—and I suppose it is impossible to be specific—how many years ahead do you project, "OK, it's the

low-load-growth field that we're following, as opposed to the upper?"

Mr. McConnell: Well, we think that our instinct would normally be to be able to discern that we were moving on a different trend in about a five-year period after any given decision.

Mr. Richmond: Following on from Mrs. Grier's question, Mr. Rothman indicated that we had been tracking, I believe from your chart, for the last three years at the high-load-growth scenario. Does that mean if the Ontario economy continued on that course for another couple of years, Hydro would feel we are into the high-load-growth scenario and that would necessitate certain decisions on your part, be they demand management or supply?

Mr. Rothman: I am glad Mr. McConnell said it takes five years to recognize a change in the trend. Remember, go back to 1982 and all the economists were dusting off their depression scenarios and everybody was adding 32 and 50 and getting 82, this notion that there is a 50-year cycle and we were going to go back to 1932 again.

I agree with Mr. McConnell that it takes five years or so to be very sure about a changing trend, and of course during that five years we will have been changing the forecasts, as we have. What has happened between 1984 and now is that the forecast itself has started to come up and so our median forecast, if you look at it now, is a good deal closer to the high-growth scenario of 1984 than was the median forecast in 1984. That is really the way we have been dealing with it.

Mr. Richmond: You are saying that if up to 1991 we were still in this high-load-growth position, Hydro would feel then that the Ontario economy was definitely in a high-load-growth scenario?

Mr. Rothman: Yes. We would have been moving towards it all along, though, and we would still have scenarios that would predict higher growths.

Mr. Richmond: If you have this five years' experience, you would feel that?

Mr. Rothman: Yes, but we would then be having a median forecast that was significantly higher than the original median forecast. We would have been tracking the forecast up over that period.

You are kind of getting at a question that is one long-term forecasters have to deal with all the time, which is on what evidence do you change a forecast that has not yet been proven wrong? My forecast for the year 2000 that was made in 1983

still has not been proven wrong because 2000 is not here yet, but it has been changed.

On what evidence do we change those forecasts? It is a difficult issue, but it is that kind of evidence that we get all along. We try to look for evidence that we have a base or that we have some change in the economy that was unanticipated a year ago before we make those kinds of changes. We have been, for that reason, not quick to make changes. It is an easy temptation in forecasting to forecast that the next five years will be like the last five years, that next year will be like this year or whatever. We try to resist that temptation, not always successfully, I think.

Mrs. Sullivan: I was just kind of smiling because a large part of this predicting of the future really relates to looking at the past, as well as making predictions about what is going to happen again. As a consequence, it seems to me that we are looking backwards as much as we are looking forward in lots of ways.

I wonder if in your forecasts you are including on an equivalent basis the lead time for the demand management options for all of the design, for the production and so on. Is that part of the built-in assumption? I assume that it is on the supply side. I should not say "in terms of your load forecasting," but it has to be part of the load forecasting. If you are predicting indeed that there is going to be a lower load, then how do you build the time of development into that forecast?

Mr. Rothman: We try to look at aggregates in the beginning—that is part of the answer to the question that you asked last time—and then as we get more detail and more experience, we can build that in better. What we are trying to do at the beginning is to take some gross costs. We have information from other utilities on what kind of success and what kind of lead times they have had, so our first forecasts are essentially kind of: "What are your targets? What are you planning to do? How much aggregate money do you expect to spend?" Then we make some guesses as to what kind of time line that might produce.

As we actually get some experiments or some pilot projects done in Ontario, as we get some experience in Ontario, we will start to be able to factor that better into the forecast. We do try to take that into account. I know that occurs.

Because we do not yet know what the programs will be, we do not have any real way of saying what the time lags will be, except to take some aggregate measures and look at other people's experience and say, "Well, on the aggregate, if you spend X million dollars this

year, you will get Y results next year and Y plus Z results in succeeding years," and effectively try to use that kind of technique in order to be able to make some estimate. Initially, I think what we are mostly talking about—and this is probably still true in the current forecast, because we do not yet have much program experience here—is how big a commitment we are making, and we are getting time lags for that. As we get more experience, we expect that we will be able to make better judgements about what our actual time lags are likely to be.

Mrs. Sullivan: The other question that I wonder about is in relationship to the predictions. I am not sure if this is part of your scenario planning or not, but it probably would fit under higher productivity and so on. If we saw quite rapid change in our industrial sector to electronic technologies, robotics and so on that was not predicted or was not widespread five years ago and heretofore has not been part of our experience, how would you build that into a load prediction for the year 2000?

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Mr. Rothman: That is the purpose of doing scenarios. We try to answer questions like, "What happens if the underlying governmental policies and the industrial decisions produce much more robotics, much higher productivity growth, than is in our current forecast?" What we try to do is put together a coherent forecast based on those assumptions.

You started out saying that forecasts have to look at the past. One of the things we try to do with scenarios is to make some assumptions about the future; that is, the scenarios are much more future-oriented kinds of forecasts than are our model-based forecasts, which are essentially historical, projections of history into the future.

We do try to do that, and of course we can only do that for a limited number of possibilities. What we try to do is to combine cases so that we have cases that represent higher productivity but we combine it with a good trade environment and we combine it with a good government policy environment and put that all together, so that we can have kind of, "What happens if everything goes well?" together in a scenario.

Then that can be worked through into the plan, because when we do a scenario, we do a complete forecast. We have forecasts of gross domestic product and of interest rates and of inflation rates and of Ontario Hydro cost escalators and of foreign exchange rates and of labour-force participation rates, of all of this stuff that we need, that the planners need to be able to

run through their whole planning modelling. That is the way to handle it.

Mr. McConnell: I think it is fair to say, Mrs. Sullivan, that with regard to high technology, we do not know exactly what kind of electrotechnology will exist in the year 2000, so that does represent an uncertainty. I believe one of your scenarios is called a high-tech scenario, is it?

Mr. Rothman: I think we now call it higher productivity.

Mr. McConnell: In any event, there could be inventions that will move the province forward that are electrical-intensive, and there may not be. These kinds of uncertainties do in fact contribute to the bandwidth.

I believe there was someone the other day who inquired about the question of electric batteries in the role of storage. I am not too sure; was that you, Mr. Matrundola, who inquired about that? In any event, electric batteries also represent a question about electrical demand. If it is by the middle of the next century that this world is going to have a desperate shortage of low-cost petroleum and gas, it is a long time between now and the middle of the next century, but there will be an intense technical search for substitutes, and of course, if an electrical battery should be developed that has long range and high capacity, that would mean the entire transportation industry, which at the moment is not electrified, could suddenly become a big demand. That enters into a part of the uncertainty too, in terms of forecasting the future.

So the point that you raised is a very valid one. The technology is very much a part of the uncertainty.

Mrs. Sullivan: I have another question that sort of follows on this. Is there a sector among your three basic customers—commercial, industrial or residential—whose behaviour is easier to predict than that of other sectors?

Mr. Rothman: The residential sector is easiest to predict, because demographic patterns—although, as I said, they are less certain than they used to be—are still relatively stable. The number of households still roughly follows the demographic patterns, and growth in the residential sector is more driven by growth in the number of households than it is by intensity of use or appliance saturation within the uses to households, so the residential sector is easiest to predict. The industrial sector is hardest to predict. That leaves commercial.

Mr. McGuigan: On the nonutility production of electricity, I can see two scenarios, one being

that it is somewhat self-regulating, so that in boom times your industries would be operating at a high capacity. These would be the people, presumably, spinning off some power to Hydro, and therefore they are going to be available and perhaps even putting off a little more power than the contract called for. On the other hand, if we got into a depression some of these people would be closing down and going bankrupt and so on, with less demand for electricity in a depression situation. Therefore it strikes me that there might be sort of a self-regulation in that system. A flip side of that, although I tend to think it would be a small percentage, is that some industries when they got in economic trouble would tend to increase their output to Hydro because it was a profitable venture.

I am just wondering how much of that you have taken into consideration in your forecasting for nonutility generation.

Mr. Snelson: I think the points you raise are real, and I think that, at the moment, we have not been putting a lot of weight on those facts. We know they happen, but we have not tried to quantify them. While it is possible that some of our suppliers may be going bankrupt during hard times, I do not think we really want to rely upon it. The points you make are real, and, as we get more sophisticated, maybe we will be able to take them more fully into account.

Mr. McConnell: We will be making presentations to you having to do with the nonutility generation. At that particular time, that will give you a better feel for the probable energy resources associated with that nonutility generation. Specifically, we would expect a high percentage of it to be running on gas, and probably not long-range contracts, not 40 years or anything like that.

Mr. Chairman: If we could move on now to the items of resource smoothing and resource preferences. Perhaps we could hear the presentations on both of those topics at the same time and then pause for questioning.

As the committee is going to reconvene at 1:30 p.m., I would propose to adjourn sharply at 12 o'clock. We now have 40 minutes. If the projection, Mr. McConnell, for the time you will take to present is 25 minutes, I would just inform the committee that that would leave us 20 minutes for questioning. Members might want to bear that in mind when they are putting together their questions.

Mr. McConnell: The remaining presentations we have continue with these general things that apply to both demand and supply. Taking, first,

resource smoothing, it deals with strategy element 2.3, which we have here on the screen. To maintain flexibility and to reduce costs, resource smoothing will be considered.

That raises the question in your mind: What do we mean by resource smoothing and how does it provide that flexibility?

In order to get an understanding of what we mean by resource smoothing, I would, first, just quickly remind you that we are giving top priority, of course, to demand reduction and efficiency; top priority to demand management in terms of load shifting; and high priority to purchasing from nonutility generation. Then we indicated that we have further needs that we would expect with the median or the upper cases, that we would still have substantial supply and/or purchases to make. Within the supply, we have indicated that we give a high priority to the development of the remaining hydro in Ontario.

1120

Whether you are talking about these demand options or whether you are talking about the supply options, if you try to take one option and develop it very fast, that is to say if you treat it theoretically and say that there is an infinite amount that is available instantly, you quickly find yourself in deep trouble, that is not reality.

To try to develop one option too fast is not practical. We tend to think in terms of price tags that are associated with an option, but in fact if you try to do anything too fast, it tends to drive the cost of that option up. In fact, if you try to deal with an option too slowly, it tends to drive the cost up as well. There is an in-between pace in which you can enjoy minimum costs. If you lean too heavily on one option and you have an unrealistic program and it does not materialize, then of course you are jeopardizing reliability.

The whole notion of resource smoothing is to take into account the reality. It is having a program in which you take into account the reality that indeed for any option there is a limited delivery capability that is associated with it.

On the slide here, I have just indicated a number of the resources in which we have limits in the real world—designers, consultants, manufacturers, constructors, operators, maintainers, materials and money. So resource smoothing is a process that tries to make any real plan or set of plans realistic in terms of considering the ability to deliver.

You might jump to the conclusion then that in order to formulate the program and in order to evaluate it, we start off with resource smoothing. That is not the case. Resource smoothing is not a

primary criterion. What we do is first of all consider all of the options and consider their availability, cost, the schedule we would like to have and the flexibility that we provide.

Then, having figured out the best overall plan, based upon those fundamental criteria, we come back and look at that plan from the point of view of whether or not it is practical. So it basically is an adjustment process that we are talking about here for resource smoothing.

Another notion having to do with resource smoothing is that other things being equal, we try to use Ontario capability and Canadian capability. If you have manufacturers and you give them lots of business for two or three years and then you do not give them any business for two or three years, you are not making life any easier for industrial capability in Canada or Ontario. So resource smoothing then also can help in terms of providing a steadier workload in terms of industry.

Let me go from the theoretical comments that I have just made to the practical ones and use hydraulic generation in Ontario as an example. We will be presenting more information to you later on this subject. We have been able to identify in the province that there is a possibility of another 2,700 megawatts that looks economic or near economic and at least this 2,700 megawatts deserves consideration. Of course, as we have already said, the public had given widespread support, although not unanimous support, to the hydraulic option, and this 2,700 megawatts is in some 15 or more sites.

With the median forecast that Mr. Rothman just presented a few minutes earlier this morning, if it turned out that all 2,700 megawatts was economic, that would meet about four years of our needs; that is to say, the needs over and beyond what we would get from demand management and from nonutility generation.

On the other hand, this 2,700 megawatts does not have much energy in it. It is a small amount of water. It could meet perhaps a year and a half of energy growth. In terms of this year, all of that 2,700 megawatts would probably match the energy growth we will have in 1988, because we are having a very high growth this year.

At any rate, the question then is, why not develop all of that and try to do all of that to meet that four years or to get all that energy out of it and do the whole thing in perhaps a year and a half?

I think what we would like to suggest to you is that is not really very practical when you start

considering the resources that are available to do this sort of thing on some 15 or more sites.

Even if you did, because of the limited energy, it really would not put off our needs to be doing other plans for more than a year and a half, even if you were to have that extraordinary effort to plan and design and have all these various teams and try to mount programs on 15 different sites simultaneously.

Then of course, after you have all these people wound up to try to do all of this for you, you would present them with no work at the end. It would be very difficult to motivate Canadian and Ontario industry to do that.

Furthermore, if we try to do it that way, it probably would become uneconomic in the process because we are trying to do so much so fast and in terms of the limited capability.

So the better approach we are suggesting here is that the best way to deal with that remaining economic hydraulic is to do resource smoothing. In that process, whether you folks are aware or not, for quite a long time we have used private enterprise to do the development of the hydraulic. We have been doing that in the past and it is our intention to do that in the future. Basically, the notion that we have here is more of a steady workload on the manufacturers and the consultants and so on that we would engage to develop that remaining hydroelectric.

Our proposal is to give high priority to the hydraulic, to do it in an orderly and efficient way, and because much of this capacity is in northern Ontario, we would be doing it and we would also be making a steady contribution to the economy in northern Ontario.

Our plan is to develop this over the 1990s and the first decade in the next century, which basically means that all the commitments for all these sites would have to be made in the early 1990s in order to get on with it to deliver that.

In summary, on the issue of resource smoothing we have given you an example which is an example of the strategy that resource smoothing can be applicable to other options, including the nuclear and fossil, and that the advantages are that it provides flexibility. If we have this smoothed program and we find ourselves in trouble, we can try to speed it up a bit or slow it down a bit. At the same time, resource smoothing ensures reliability—you are not trying to do something unrealistic—and also contributes to the maintenance of Canada/Ontario capability.

That completes the presentation Resource Smoothing. If I may, I would like to move right on to Resource Preferences.

1130

Mr. Chairman: Yes, please do.

Mr. McConnell: Resource Preferences deals with strategy element 2.4. This strategy is as follows: Resources meeting the basic criteria of low cost, reliability, flexibility and quality will be preferred, based on the nature of the primary energy source, in the following order: first priority, electrical efficiency, renewable energy and waste fuels; second priority, plentiful fuels; third priority, scarce fuels—and also based on their source—in the following order: first priority, Ontario indigenous resources and electrical efficiency; second priority, other Canadian resources; third priority, foreign resources.

You will see in this that basically the first component here is the prioritization of resources having to do with whether they are renewable or abundant, and the second set of priorities has to do with the sources, whether or not they are indigenous.

What I propose to do now is to review with you quickly this strategy element. First of all, I would like to remind you of what the primary evaluation criteria are. Second, I would like to discuss with you these preferences we have just introduced, in which we consider these criteria as secondary evaluation criteria, to provide to you the rationale for the preferences, to give you a practical application and then to solicit your views on this subject.

In the flyover we had last week, Art Marriage talked about the primary criteria, which include technical feasibility; reliability; environmental acceptance, which is a mandatory requirement; social acceptance, which is mandatory, and of course customer satisfaction. Those are the basic requirements we want to satisfy whatever option we pick.

Then we have, also as primary criteria, the cost comparison factors. We talked to you yesterday about the concept of total customer costs, the issue of financial impacts, rate impacts, risks and flexibility, which we have been talking about this morning.

Those are primary criteria, and for these resource preferences we consider them secondary criteria. We are saying those other factors get the first weight but, on the other hand, there is a question I am sure you have thought about. Mrs. Grier raised this last week with us, and I think it is an important thing. That is, to what extent should we give these secondary criteria consideration? Should they enter into the decision-making process? Should we stick rigidly to the primary

criteria or should these factors be considered a factor and, if so, how much?

As I mentioned yesterday, when we met with the select committee in 1986 and posed the question of whether these preferences should get any consideration, the response we got was that there was no standardized quantification. For example, could we give a five per cent preference to indigenous or could we give a five per cent preference to renewable and so on? Ontario Hydro senior management debated this at great length too, and we essentially agreed with the select committee that this is not easy to determine in advance and that each one should be decided on a case-by-case basis.

We did report to you that in people's minds, resource preference is a factor that the public want us to consider. As indicated yesterday, we will quantify that to the maximum degree that we are able, so that when we put forward our recommendations, they will include these preferences and also include a statement of whether the preferences have in fact been a part of our judgement in terms of influencing the decision.

The rationale for considering these preferences as secondary criteria that could influence the decision is that we favour a renewable resource. Of course, the classic one there is hydraulic. If you have a renewable resource that can go on decade after decade, you do not have to worry about fuel security. You do not have to worry about whether somebody suddenly cuts your supply off.

Of course, that is what happened to Ontario in the early part of this century and that contributed to Ontario Hydro being created. We were getting coal from the United States. They cut us off, and we were scrambling in this province to buy coal from Wales.

If you have a renewable resource, it has the advantage that you have it and it goes on. There might be a drought once in a while, as in the case of hydraulic, but you have it. In the same way, if you have a renewable resource, you have price security. You do not have to worry about somebody coming along and suddenly saying, "You have been getting it from us and you are going to be able to get it in the future but at a much higher price."

In the case of abundant resource, the same two things apply. If the world is well endowed with a particular commodity, then of course you have a much better chance of having a secure fuel supply and a much better chance that the price will be stable. Of course, the classic example there is that if you are depending on gas and oil,

which are basically scarce in the long term, you can expect that during the course of a 40-year lifetime of the station there will be a lot of continuing uncertainty in terms of both fuel security and price security.

In terms of preference for Ontario Hydro, favouring Ontario and favouring Canada as a source, if it comes from Ontario or if it comes from Canada, we have a much higher security in terms of depending upon being able to get it and a much greater security in terms of price. But also, if it comes from Ontario or Canada, then of course that means that the jobs are being provided in Canada and Ontario and our trade balance relative to other countries is enhanced, and we have more direct control of our destiny.

Just to give you the practical application of the implications of those resource preferences, we have drawn up a chart here in which we show across the top, the one preference that has to do with the abundance over the long term and down the side, the source of where that fuel comes from: Ontario, Canada or foreign. This means that in this upper left-hand corner you have the highest preference because it is both renewable and located in Ontario. That would apply to the hydraulic; it would apply to improving electrical-use efficiency, demand management, and it would apply to load shifting in terms of demand management.

There is also then a preference here to buy from Canada, hydraulic from either Manitoba or Quebec, so hydro purchase falls in there. At the same time, uranium gets a high priority because it is located in Ontario and it is plentiful, so that you might say in some respects that those are closer to equal. Then, of course, we also buy uranium from Saskatchewan, which is plentiful and located in Canada. We also buy coal from western Canada, which is plentiful and located in Canada. Of course, the lower priority has to do with oil and gas, which are scarce but located in Canada, or coal from the United States, which is plentiful but outside of our direct control.

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At any rate, that indicates the practical application of these preferences. Although we have developed our strategy and put these things forward, we still would be very interested in this committee's views. Are we right in considering these as secondary criteria, or would you like to consider them as primary criteria or not at all? Do you feel that these resource preferences should be quantified? In other words, have you had any change in mind? We would welcome any other

views you may have on this subject. That completes the presentation.

Mr. Chairman: Thank you, Mr. McConnell. Mrs. Grier, do you have some questions?

Mrs. Grier: I have trouble reconciling the resource smoothing in your example of hydraulic with the resource preferences and all the obvious benefits of hydraulic. You give us your reasons for going to smoothing, the negative approach to hydraulic; yet in your listing of things in the next section, it is so much on top. How can you reconcile those two for me?

Mr. McConnell: Basically, our position on the hydraulic is that we give high priority to developing all the remaining hydraulic that we have. That is what we plan to do.

Mrs. Grier: But spread out over two decades.

Mr. McConnell: But we said that what we are proposing to do—when you spread it out over two decades, that means you have to do the majority of it in the 1990s. In other words, those projects do not get built overnight. So that means you have to launch a very large number of projects during the 1990s in order to make that happen during the next two decades.

I would like you to separate the two notionally. One was on the need for a practical program to consider the resources that you have to have in order to deliver that program. The other was really intended when you are selecting your options, whether you should have a bias in making those option selections in the first place on the basis of those preferences.

Mrs. Grier: Let me try to phrase it another way. I have a bias. I think hydraulic is preferable to other modes and I guess you have taught me that and all of the advantages of low cost and environmentally benign and all the rest of it. Why would I then, when it comes to resource smoothing, not try to accelerate hydraulic rather than decelerate it?

Mr. McConnell: Our desire in resource smoothing is to develop it as fast as we practically can. That is what we are really saying. But we would not really want to try to make it so fast that it was uneconomic.

Mr. Snelson: I think part of the resource-smoothing concept is that you may decide to do things ahead of need so that the program is smoother. Certainly some of our hydraulic projects—and that is an idea that is built into our hydraulic planning, that we can do some of the hydraulic projects a little ahead of need from other considerations. That will produce a smoo-

ther program. That will have some of the hydraulic plant coming in early rather than late.

Our plans for Little Jackfish, Mattagami and the redevelopment at Niagara have been under way now for three years. At the time they were initiated, they were certainly considerably ahead of the theoretical need date. That was done for resource-smoothing reasons and also for resource-preference reasons.

Mr. South: I am sorry I missed the first part of your resource smoothing, Mr. McConnell. You said the development of the projects would, by and large, be turned over to free enterprise. Have you thought in terms of putting in a penalty/bonus clause for bringing a station into service quickly? Say there are 15 of these and you have got 2,700 megawatts. These are approximately 200 megawatts each. Even if only 50 per cent is available for the year, when you think of 100 megawatts per year, I do not know what that brings you in revenue, but if you are looking at a growth rate, I think you said, of something like 700 or 800 megawatts per year, it would seem that you could pay an entrepreneur a sizeable bonus as an incentive to bring that station on service before what you would predict he would bring it on service.

Mr. McConnell: The answer is yes, we do constantly discuss the subject of incentives having to do with people who do work for us; but in the case of hydraulic, which is the example we are talking about, the group of people we are most dependent upon are the consulting engineers we retain who are managing that project. When we set down a schedule and enter into a contract with those consulting engineers, some of the things they face, we would have faced too, such as getting approvals, the question of just how fast can we move that project, public concerns that might arise having to do with stirring up old river beds with mercury in them, resistance that might come about from flooding gravesites of native peoples and so on.

It is very, very difficult when a contractor is being paid, say, for the sake of argument, five per cent of the total cost of the project, to start to put penalties on him having to do with the other 95 per cent. That is very difficult to achieve. In the real world, I cannot recall very many instances in which a utility has been successful in getting a consultant to take on the liability that is associated with schedules.

Mr. South: I think the consultant plays a smaller part in the game—and I appreciate that getting approvals takes a long time—but the contractor's part of the game is not as dependable

as the consultant's part. If you offered bonuses to the contractor, I think it would be very worth while because they would be in terms of thousands of dollars a day and that is quite an incentive. Money does talk.

Mr. McConnell: That is true. On the other hand, if you stop to think about the manufacture of turbine runners and a number of other things like that which enter into the schedule, there is a question of whether you really want to have these manufactured in Canada or Ontario or whether you are prepared to go outside. If you wanted to go to Europe, you could speed up the schedule, but at the same time, this resource-smoothing program that we have outlined has the advantage that it provides for steady employment of the remaining resources and the smoothing is not limited to just slowing the schedule down. As Mr. Snelson has said, we are talking about a smoothing program that brings some of it on sooner and some of it on a little bit later, provides a steady work load and gets the job done most economically.

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Mr. Argue: There was a recently concluded small hydro conference in Ontario sponsored by the Ministry of Energy where there were eight manufacturers of small hydro turbines, and that industry has a shortage of projects at this time in Ontario. They geared up because of signals from Ontario Hydro and the government that this was to be a high priority; yet for a variety of reasons there has been minimal development. One of the things they point at is that presently because of the way you treat buyback rates for accounting purposes and putting them into the rate base, once you start buying power from these projects, that is a disincentive. You are looking at a time frame of requiring power under the median growth between 1996 and 2002, depending on which plan you are looking at. Right now, paying them for the capacity side of their projects amounts to about 0.2 cents per kilowatt-hour.

I am wondering where you are saying that resource smoothing can speed things up and can slow things down, would you not agree that at this time the emphasis has been on slowing things down somewhat from the nonutility generation?

Mr. McConnell: No, I would not.

Mr. Argue: But it is 0.2 cents per kilowatt-hour for capacity payments, Mr. McConnell.

Mr. McConnell: Basically, we will be making presentations, Mr. Argue, that will be talking about the nonutility generation, and you could raise that kind of question then. The

example I was talking about this morning had to do with the large hydro that Ontario Hydro is talking about developing.

Mrs. Sullivan: I want to share your comments relating to resource preferences. If we are looking at the options that are available in terms of efficiency or purchases, but particularly with the efficiency situation, one of the things is that, for example, if load shifting becomes successful, that load may change so that we could end up with two peaks. I do not know if that could ever happen, but I suppose it could.

Mr. McConnell: Yes, it can happen.

Mrs. Sullivan: The preference then for new development should allow for flexibility to adapt to that kind of created demand in the system. I should not be using "demand" that way, but a created response in the system.

Mr. McConnell: Mr. Palmer, I believe it is, will be talking about load shifting. At any rate, we will be making a presentation about load shifting. Mr. Palmer did indicate in his presentation last week that we have time-of-use rates that are imminent and that they, in part, are intended to bring about the load shifting you referred to, Mrs. Sullivan. I think Mr. Palmer indicated that if that did not make it happen, we would add incentives to it to make that happen. If, as in your observation, we made it so attractive that instead of having a peak in the daytime we had one at night, we would be motivated then to back off the time-of-use rates and that would tend to keep that swing from going too far.

Mr. Snelson: You have perhaps gathered from my accent I come from England. The British power authority, the Central Electricity Generating Board, and the area boards, have been into incentives for off-peak loads since the 1950s. At one stage, they did overdo it and produced peaks during off-peak periods. They then tried to back away from some of the incentives they had offered to get things back under control.

Mrs. Sullivan: You could still move away from incentives and create some dropdown, but you still might need a larger base or a kind of generation system that would increase energy to allow for a move up in the peak.

Mr. Snelson: If you were to go to a flatter load curve, then it would affect your choice of generation resources as to what was most economical and you would tend to go for more base-load resources that can operate all the time and fewer peaking resources that only operate during peak periods.

Mrs. Sullivan: What I am saying is that Hydro is probably right to look at it on a case-by-case basis in terms of resource preference. What would the other argument be for our committee, by example, to put forward preferences?

Mr. McConnell: Yes, you could say to us that you would like, in order to ensure that indigenous resources or renewable resources were given the top priority, we would adjust the cost base by X per cent. In that way, we would move away from a judgement into a policy direction, if you wish. That would be the option.

Mrs. Sullivan: Which would also subsequently limit Hydro's operating options and possibly increase cost.

Mr. McConnell: That is correct. It would reduce the judgement that we would have to make and that would be an option. I am not saying I am opposed to it or for it. I am just saying those are the options.

Mr. Chairman: Noting that it is now almost 12 o'clock, I will adjourn the committee until 1:30 p.m. I would ask that the steering committee meet, and why do we not hold that meeting at 12:30 in the room next door? Because of the expanded hearing schedule today, I think we will forgo the pre-meeting in camera of the committee and just come straight in and start this committee meeting at 1:30 sharp.

The committee recessed at 11:58 a.m.

AFTERNOON SITTING

The committee resumed at 1:43 p.m. in room 228.

Mr. Chairman: I would like to call the afternoon sitting of the committee to order, not quite at 1:30 sharp, I note.

Mr. McConnell, I believe when we left off the next presentation was to be on public consultation. Mr. Falconer is here. Why do we not proceed with that presentation?

ONTARIO HYDRO

Mr. McConnell: While Mr. Falconer is going to the stand there, I note that this is the last of the strategic statements that has to do with general demand and supply and then we will be moving on to demand management.

Mr. Falconer: I am here this afternoon to talk about and explain strategy element 2.5, which addresses public consultation.

My presentation will have five sections. I will cover the strategy element itself briefly; the consultation context; general review requirements for plans and projects; consultation and communication approaches used by Hydro, and Hydro's policy commitments and directions.

Strategy element 2.5: Consultation with customers, the public, governments and the Legislature will continue to be an integral part of the planning process.

What does this mean? Clearly, it states Hydro has a commitment, which is to continue public consultation and to do so as an integral part of the planning process. In addition, the text around the strategy element includes Hydro's responsibility to inform and consult with people affected by Hydro's plans and projects and to reflect the values of the Ontario community. The text also encompasses the legislated requirements for public review by various review bodies.

The consultation context: I think it is important to look at the general context and some of the realities. Consultation and communication is a regular process with Hydro, and it is one that is increasingly required and expected in today's social and business environment.

It is also a process that is not new. Consultation and communication with Hydro's various publics has been going on for years and is evolving. For example, there was consultation on the southwest Ontario project in the 1970s and the eastern Ontario regional transmission line project in the 1980s, and today we have a

transmission line study for the provision of power to the Windsor and Sarnia areas.

In this process, we normally reach a large number and a large variety of people, and the particular methods that we use depend a great deal on the situation. That includes factors such as the size and nature of the project, the publics included, the kinds of issues we have and so on.

Hydro's consultation and communication, above all, are committed to being genuine processes with integrity. This means that Hydro attempts to provide real, genuine opportunities for people to hear the corporation and for people to be heard by the corporation.

General review requirements: It is important to mention, and it is not always remembered by everybody, that Hydro has a variety of review requirements to satisfy before a number of forums which represent the public.

Hydro's plans are regularly submitted to its board of directors for approval. Board members, in turn, are appointed by the government. The Power Corporation Act requires Hydro to get approval from the Ontario government for all supply projects. In addition, Hydro must meet all regulatory requirements of the Ontario and federal governments. This means all major supply and transmission projects must meet the Environmental Assessment Act of Ontario. Finally, the Ontario government periodically requires special reviews of Hydro's plans by various review bodies. This includes reviews by the select committee on energy, the Ontario Energy Board and by royal commission.

Obviously, things do not just stop at public review requirements. As well as meeting these requirements, Hydro has evolved processes for listening to the public and meeting their needs for information and involvement. This has included consultation and communication programs featuring, as you heard in part on Friday, various approaches, such as media announcements, project newsletters and updates, information centres, working groups, committees and so forth. Another method is surveys, such as customer surveys that you heard about.

Another method is community impact agreements, which are legal agreements made with host communities around generating stations. This has included Atikokan, Darlington and the Bruce, where Hydro and the host communities have a form of partnership. By this, Hydro agrees to consult with and jointly monitor and measure

community impacts and, if necessary, to mitigate any impacts of project construction. These are programs where we reach a lot of publics in a lot of different ways.

Policy commitments and directions: Hydro recognizes the importance of consultation and communications. It is firmly rooted in formal corporate policies. For some time, Hydro has had corporate policies for good citizenship which are committed to ensuring fairness and openness. These policies stipulate, for example, that Hydro will consult during the planning and implementation of projects, will encourage the timely exchange of information and will provide suitable compensation and mitigation for any affected parties.

Recently, these policies have been updated in the corporate strategy for the 1990s and the corporate initiatives. We have set priorities and emphases for the corporation on communications and responsiveness to customers. This has included the statement in the corporate initiatives, for example, among a great many other things, that Hydro must inform and listen when the Ontario community speaks.

Planning for the future, as has been said many times over the last week, I am sure, is a very complex and uncertain process. I would make the point that so too is consultation and communication. This means we know we will fit and we know we will meet the needs and circumstances we encounter from here on, but we do not know precisely how and what form this will take at this point for our consultation and communication programs.

The strategy element says we do have a commitment to consultation and, as the chairman said in his opening remarks, we envisage and seek wide public consultation at every step of the way into the 1990s.

Mr. Chairman: Thank you, Mr. Falconer. Are there any questions of Mr. Falconer on the public consultation process?

Mr. Grier: When you are into consultation, I am wondering how you facilitate the public's making the tradeoff decisions. For example, the results of your consultation, we have been told, are that your customers or the public want low rates and reliability. I guess we all want low rates and reliability on everything. If the question is asked, low rates as opposed to scrubbers on the coal-fired plants, how is that factored into your consultation process? How is the public made aware of the choices it is making when it gives you an opinion?

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Mr. Falconer: In the past phase of public consultation, what we attempted to do was acquaint the public with the issues. We asked people for their comments on making tradeoff, and we found that the tradeoffs are a very difficult thing to make. A great many of the public are equally troubled by these kinds of things, as are many others. We did not reach a great level of specificity on this, but we did achieve a hearing of values, of what is important to people.

Mrs. Grier: In the Goldfarb customer survey that you did, what kind of questions did you ask?

Mr. Falconer: We asked people how they felt about specific options, and then how they felt about them, given price comparisons. For example, there is gas-generated power and nuclear power. We did attempt to find out to what extent reliability is an important issue, to what extent rates are and to what extent the environment is. We found that people would willingly pay more, for example, to achieve environmental protection.

Mrs. Grier: I had not realized that you were into transmission-line studies for Sarnia and Windsor. I am very familiar with the southwest transmission line and all of that process. I am wondering what you are doing differently as you embark on a new transmission-line approval process from what you did in the southwest one.

Mr. Falconer: I think we have more familiarity with some of the techniques of how you can conduct consultation with people on a transmission line study. We know what many of the issues are. We attempt to provide information on that basis. We have a number of information centres. We try to notify a very wide swath of people who are affected. We want to make sure we achieve coverage.

Mrs. Grier: At some point, I would appreciate knowing a bit more about that, because the techniques were pretty good on the southwest transmission one. They went awry at the approval board stage. I would be interested in knowing what different techniques you have for this one.

Mr. Falconer: I do not think the techniques themselves change a great deal, but it is the fine-tuning, the timely application of various techniques.

Mr. Matrundola: Last week, I believe, Mr. Falconer mentioned the fact that customers generally are not sophisticated, but I believe they do recognize the difference in rates and bills. I

would also say to anyone who creates a product that a customer realizes the difference in the service and reliability, depending on the product and stability and so forth. Did Hydro check strategic principles with demand management and independent generation industries?

Mr. Falconer: We have talked to municipal utilities and we have talked to major customers on the strategy, which includes a great many of these principles that you are talking about. I do not think I would characterize the public as not sophisticated. I think there is a great deal of intuitive wisdom with the public. They may not have specific terminology for particular concepts.

Mr. Matrundola: But they do understand the difference.

Mr. Falconer: Oh, yes.

Mr. Matrundola: At least I find the public to be very sophisticated about many things. I think they do understand the difference.

Mr. Falconer: I would certainly agree with that.

Mr. Snelson: Can I just add to that? I believe Mr. Palmer mentioned in his first presentation on independent generation that we had held a workshop with representatives of the independent generation industry at which things such as our bidding proposal were discussed. There has been some discussion in that forum.

Mr. Charlton: I do not really have any questions at this point. I would just like to repeat what I raised last week, and that is I think it would be helpful to the committee if we could see some of the introductory presentations that were done at some of the workshops and the questions that were asked on the Goldfarb study, so that we could get a sense of both how you approach the issues and what it was you were asking people to respond to.

Mr. Falconer: In point of fact, we have packaged all that material and it has been sent.

Mr. Chairman: It is not received.

Mr. McConnell, can we then move on? I take it there are no more questions from the committee.

The next item is demand-reducing options, from Mr. Palmer. I think that is a fairly lengthy presentation, so I would like to pause after Mr. Palmer's first presentation to see if the committee has any questions, and then we will go on to Mr. Palmer's second presentation. I believe these presentations are in the brown envelopes that are on your desks.

Mr. Palmer: As we start this session, we are moving from item 2, general demand and supply, to matters of demand management, item 3.

Demand management is influencing the amount and timing of electricity use by our customers. This presentation deals with the strategy element on demand reducing options. It says, and this is strategy element 3.1, "Demand-reducing options will be pursued to the full extent that they are economic compared to the available supply options in the relevant planning period."

Customers are interested in those demand options that reduce their use of electricity but do not reduce their level of energy service. These options improve the customers' electrical efficiency, in the usual sense of the phrase, and are the ones Hydro is pursuing and planning to pursue. Customers participating in a particular electrical efficiency program will have lower hydro bills while enjoying the same level of service as before.

The total cost to all customers is minimized and the construction of new facilities is delayed for a while longer, all of which was eloquently explained to you by Ken Snelson in yesterday's session. We are therefore vigorously pursuing all such demand-reducing options. During the presentations this afternoon and tomorrow, you will hear of the research and development, the barriers and the programs.

I want to come back for a moment to the barriers. In trying to get a new product on the market, all good marketers spend some time developing what they call a situational analysis so they know what kind of marketplace circumstances exist into which they wish to launch the product. To some extent, what we are calling barriers in these presentations are, in fact, this normal kind of very careful look-see at what the struggle will be and how best programs can be shaped in order to meet that particular market or customer situation.

My overhead mentions some municipal utility partnerships so important to all of this. I have very little to say about that at the moment since we have a presentation coming up dealing with that issue in some detail.

In our studies, we have identified a variety of options in each of the principal market sectors. In the residential sector, as you can see, there are the obvious ones of improved insulation, draughtproofing, doors, windows, heat pumps and appliances. They represent, collectively, pretty much all the activity in the ordinary household that will influence the use of electricity.

It is not surprising that in the commercial sector we may have some of the same items appearing, but perhaps some different ones as well. Lighting is one of the principal ones in the commercial market that is not very important in the residential.

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Of course, we have heating, ventilation and air-conditioning improvements and again the question of heat pumps arises. We certainly know that as new and more efficient buildings are being developed, they often become more electricity-intensive because they use motors, pumps, fans and the like in order to redistribute heat produced by bodies and natural means to places in the building where it is needed.

Moving on to the industrial sector, a new element appears and it is a very important element: motors and drives for the production process. Again, lighting appears, and heating processes for industrial application arise. This is a rather important notion here, and I want to take a moment on it. They call this an energy improvement curve along the X axis. It is the life-cycle cost of an energy-reducing option expressed in cents per kilowatt-hour. Along the Y axis is the efficiency improvement that can be gained by a particular option expressed in megawatts.

The idea behind this chart is to plot, first, those options which cost the least and then gradually work up through all the many options. Each little step in the chart indicates a different option all the way up until you have secured, if you like, enough options in place so that you achieve some reasonable target within the price that you have set as being, if you like, your avoided cost.

So our chart shows that from a technical perspective, the options available will produce around 2,000 megawatts at about 2.5 cents life-cycle cost in cents per kilowatt-hour. That is the technical potential. I would emphasize once again that there are many, many options and the chart, of course, does not show all of them. But it does show that if a program is to be successful, there has to be a tremendous number of strings to your bow to catch all kinds of options.

For instance, in the house, weatherstripping is an option. Putting new windows in the house or adding storm windows are other options. Insulating the basement is another option. Insulating the ceiling is another option and so on. Maybe adding a new, higher-efficiency refrigerator is yet another one. Each of those options comes at a different price. This curve is to illustrate that kind of message and that kind of option selection.

I would like you to know at this point that we have not been sitting idle. We have been making progress in case you thought we have not. We have not been needlessly wasting money. We have preferred, really, to gather sound knowledge of the customer needs in this early going, get their goals, expectations, and a good understanding of the opportunities. We have worked with our municipal partners and trade allies to develop a good understanding of the whole process. We have done considerable concept testing and other types of research to help us get a sound grounding to start a major thrust.

There is a lot yet to be done, I think I should say to you, but we believe we are spending our resources quite wisely and effectively at this point. I wanted to give you a couple of examples. There is more in the text, but I will just deal with a couple of them.

CAMI Automotive Inc., which is really a joint venture between General Motors and Suzuki, was influenced by Ontario-made high-efficiency motors rather than US-made standard efficiency motors for the new car plant at Ingersoll. This was a part of our test program that we have been running in high-efficiency motors.

We have a number of companies, which are listed there, with monitoring programs in which we are co-operating with the Ministry of Energy. They certainly indicate there is significant energy to be saved in the industrial market. When one sits down and carefully monitors what energy use is in a particular plant, opportunities for energy saving do appear. Many of those opportunities have comparatively short payback periods, perhaps in the order of a year to two years, well within the companies' payback criteria for making an investment. That is an important thing to know.

Our other activities: customer and other internal and external knowledge dissemination on energy application. We use advertising, workshops, and all sorts of handout material and so on, as listed in your notes.

We have a variety of programs to encourage customer participation, as well. These include a loan plan, a business finance plan, a feasibility study assistance plan, and a variety of other energy advisory services.

Some of the research and development activities we are currently involved in, in the residential market: We have been doing a very careful audit of roughly 1,000 homes throughout Ontario. That means we are sending people skilled in this—actually outside agencies and not

people from Ontario Hydro—to do a very careful study of roughly 1,000 homes. That particular part of the study is now complete. The next part is to do an analysis of the costs of performing various kinds of options. Our plan is to have a few of these houses done by the contracting trades in order to get a better fix on the costs.

We are doing a variety of studies in appliance efficiency. We are looking at high-efficiency lighting and the various products that are on the market to see whether some are better than others, and this kind of thing.

We have the same sort of activity going on in the commercial market, another series of audits there, attempting to develop numbers and applications that will be useful for us in broad-scale programs.

To give you some idea of the magnitude of these, doing a complete audit for a good-sized commercial building here in the city of Toronto and to derive information from it useful in a wide-scale commercial program costs around \$25,000 to \$30,000.

In the industrial sector, we have a variety of programs going. The most interesting and different perhaps is in high-efficiency motors, where we are running a major test program in the Guelph-Kitchener area. I will have something more to say about that in a moment.

Another program of wide interest to major industries is in variable speed drive. This is a rather new technology, with not a great deal of application so far in Ontario, but it has a potential for saving very considerable energy. We have a major program going with Inco, along with some assistance from the Ministry of Energy, on a major grinding operation there. The early indications are that energy savings to the order of 30 per cent could be accomplished through the use of this drive in Inco, and it has wide applications in the mining industry and other areas in northern Ontario.

We are learning quite a lot from these programs which we hope will ultimately be very useful.

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I want to talk a little about the Guelph motor-test program because I think it is indicative of the kind of thing that needs to be done and from which there is a good deal to be learned about how to attack a particular option.

The first day I was here, Mrs. Grier said she had heard the test program is not going very well. I think that is a matter of judgement. Test programs are really to tell whether a major program will go well or not, so it is not the

program itself that is important, but only the information it provides.

I want to go through a few steps of this program to give you some flavour of it. We started a year ago, and the first thing we learned was that the level of knowledge of high-efficiency motors in all levels of the supply chain, right from the customer up to but not including the manufacturer, was quite low. Industrial customers did not have much notion about what a high-efficiency motor was, nor did contractors, nor did electrical distributors. There was really no stock on the distributors' shelves or the contractors' shelves that the customer could call on.

There were some customers who had some knowledge, and that knowledge tended to be somewhat negative. It was negative in a couple of ways. The first way was, the existing motor stock in industry is incredibly reliable. The standard industrial motor lasts for decades. Unless you grossly overload it or it gets struck by lightning or run over by a tank, it is likely to run there for years and years without any attention at all. There is a little bit of doubt whether you want to change to a new kind of motor when you have long experience with reliability. Second, they had some perception, although perhaps not entirely right, that these high-efficiency motors had some technical shortcomings.

We also learned that usually when an industrial customer wants to buy a motor, perhaps because his motor has failed or he has a new machine coming in, he goes to his distributor or to his contractor and says: "I want a 10-horsepower motor and run it at a certain speed. By the way, Hydro has been in talking to me about these high-efficiency motors and they have an incentive to provide. Go out and get me one." He goes to the distributor and the distributor does not have any, so he comes back and says, "Look, the distributor says it's going to be four months to get this motor from the manufacturer." He says, "You go back and buy me a motor," so he goes back and buys him a standard motor.

You learn from the test market that you need to address all these issues. We have now turned in the current year to seeing what we can do about developing the supply chain so that all along the supply chain there will be a reasonable number of motors in stock for customers to draw from.

Last Friday when I went back to my office, sorting through my mail, there was a note there from the supervisor in my shop who looks after this program. The note started out saying: "Once again, we have made a major impact on the

industry with our high-efficiency motor program. My representative from London persuaded a customer to install motors in a plant extension and he agreed to accept our \$3,200 incentive in order to do so. He went to his supplier and the supplier said, 'We can supply your high-efficiency motors,' but the supplier did not want to lose the order, so he reduced the customer's price by \$3,200, equal to Hydro's incentive, and he installed regular motors." There is another dynamic of the marketplace that one has to deal with in these programs.

I think I have lectured you long enough about this. I am just trying to explain that you have to go out and really work at these things. You get so you can design a program, in the end, that will meet those situations.

I want to tell you a little now about plans that are under development, those in the near term and in the medium term, some of which are information and some incentive-driven. We have some action going on in all sectors.

In the new housing area, we are basically setting our sights on development of R-2000 homes, very high energy efficient homes, and we are working with the building industry in an attempt to develop a good, strong infrastructure there to deliver R-2000 homes over the short and the medium terms.

The penetration of electric heating in the new housing market is currently about 28 per cent and represents some 10,000 to 12,000 new housing units a year in the current market. They are generally being built in the areas in the province where gas is not available; not entirely, but for the most part. Although we estimate that there is a pretty good level of insulation going into these homes now, an expansion of insulation requirements to R-2000 will cut down the energy requirement very substantially. We believe it is important that we develop an understanding and other factors in the housing market that will cause builders to move ahead and build a large proportion of these homes to the R-2000 standard.

We are doing similar kinds of things in the renovation market. This is a booming market, as well, in Ontario, and it is a very fractionated market. It almost defies definition. It ranges all the way from painting and landscaping to major house construction. The major weakness that we have discovered in this market is not a lack of potential—there is a lot of potential—nor a lack of customer interest—I think there is a lot of customer interest. There is just simply a lack of skilled contractors and tradesmen to carry out

this work. Anyone who has tried to get a house renovated in recent times will know not only that it takes months but that contractors can ask almost any price they want in order to get the job done. Right at this moment, in this booming Ontario, you cannot get an awful lot of action from these folks.

Our programs do involve energy information, trade shows, the EnerMark store that we spoke of the other day, an agricultural advisory service operated through our rural area offices, assistance to various allies, contractors and trades, advertising programs for the renovation market and a number of model homes.

We offer a variety of incentives—R-2000 homes, heat pumps, thermal envelope and so on—and will probably increase the incentives in the middle term for R-2000 homes.

In the industrial sector, we are also developing an audit program. I mentioned it briefly earlier. We have some things going with the Ministry of Energy, but they will certainly be increased as time goes along.

We are currently paying 100 per cent of the cost of doing these audits. We target the larger customers on the system at the moment, because they represent the biggest potential and perhaps the earliest opportunity to get some sort of demand reduction gain. That does not mean that if any particular customer in the industrial field calls on us or asks us to do such an audit we will refuse him. We certainly will not. But when we go out on our own initiative, we tend to go after the really big industry as the first order of business.

Through these programs, we identify new opportunities to reduce demand and improve our understanding of the industrial electricity end-use process and the customer's decision-making process.

I will just mention in passing, as I move to the commercial programs, that one of the interesting things in the commercial process is to find out who makes the decisions about a new or renovated building. Is it the owner, the consultant who is employed or the bank that is putting up the money? We spent very considerable money a year or so ago in an exhaustive investigation into identifying the decision-makers, the people whom you should really carry your message to in the commercial market in order to get effective results.

Our early activity in the commercial market is to improve the understanding of the people who work in the market, with brochures, manuals, workshops and various types of customer ser-

vice. In the incentive area, we do audits, we do some test programs in high-efficiency street lighting, motion sensors—that is a very interesting gimmick; I will take a minute to speak about it.

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You can put these devices in hotel rooms and when there is no one in the room, the temperature in the room drops on the thermostat. As soon as the door opens and someone walks in and moves around, it turns the thermostat back up to 70 degrees and the room warms automatically. When the room is unoccupied, the temperature drops and heat is saved, but when a customer comes in to use the room, he does not have to go around searching for the thermostat; he can hear the fan come on and the heat and so on.

Individual metering in apartment buildings and financial assistance: Many very large buildings have central metering and the customer never knows or does not care how or when he uses energy. We are doing some tests now to see whether, if he faced the cost of electricity himself, he would make some changes in his use of the product.

You can see a rather lengthy list as well of the medium-term activities we plan.

Early results expected: The initiatives I have just outlined are expected to contribute about 575 megawatts in total of demand reduction by 1993. The incentive-driven part of that is about 183 megawatts, and the information programs of one sort or another are expected to contribute about 400 megawatts in total. I will just remind you that the information-driven programs are those where, if the customer has the right information, he will find the economics right for him to proceed with that within his own payback criterion.

Mrs. Grier asked me in my earlier presentation if I could provide some figures for the breakdown on the market sectors. Some information is provided here, and I would like to augment it. I would be prepared to give an undertaking later to put the numbers on the record. I will read them out now.

We have a target of 2,000 megawatts of incentive-driven programs. On the total technical potential, without any time taken into account, about 43 per cent of the technical potential lies in the residential market, about 42 per cent in the commercial market and around 14 in the industrial market. When you put a time limit on it, say, 2,000 megawatts by the year 2000, those numbers change: in the residential, the number is 24 per cent; in the commercial market, it is 52 per

cent, and in the industrial market, it is 24 per cent.

You may wonder about that extreme non-linearity, but I would like to draw your attention once again to that jagged curve I showed. In the next 10 or 12 years we are more likely to get cheaper options in the commercial market than in the other two markets and a little more in the industrial markets than we will in the ultimate. One of the factors in the residential market that leads to that is that we do not anticipate the new Energy Efficiency Act will begin to have a significant bite until the 1990s, and some of its major effects may well take place beyond the planning period.

In addition to those incentive-driven programs, we anticipate we will pick up 1,500 megawatts through our natural efficiency or information-driven programs. But there is a great deal more to be done and there is no point in disguising the fact. Customers need to know more about the programs. They must be satisfied that the technology is sound. There must be a Hydro/municipal-utility/industrial infrastructure in place to deliver major programs.

I am sure that as we move forward, we will learn and we will go forward, but if we are going to strike a target of 2,000 megawatts, we have to learn, we have to experiment and we have to develop a capability not only in ourselves but in our allies with all the speed that we can if we are going to meet the target we have set.

I want to talk for a moment, before I close off this subject, about the 2,000-megawatt incentive-driven programs. This has been described by our chairman and president in various documents as a megaproject, quite the size of project as building a very large new station. But it differs significantly from that kind of activity.

First, when one builds a new station, it is on one site. There are carefully co-ordinated construction forces, careful accounting records kept of progress and costs. Contracts are being let and scrutinized.

This megaproject will be spread all over the province and it will probably cost maybe in the order of \$2 billion. Much of that money will go out in the way of incentives, so you have the job of monitoring and evaluation progress and keeping track of paying people money in great, large sums. It has the opportunity, if not very carefully handled, of being a gigantic embarrassment if it is not done well. We expect to do it well, but the monitoring and the evaluation of the results will need to be very carefully done.

We can do it and we can do it well. But it is going to take all our ingenuity, all our efforts and the efforts of our municipal partners and all the allies and the infrastructure of the government in order to meet a target of the size of 2,000 megawatts. We are going to have to influence, as I told you a few days ago, perhaps 4,000 to 5,000 megawatts of customers' equipment in order to secure a 2,000-megawatt reduction in our own generating capacity or avoid building new plant.

That is the end of that particular section.

Mr. Charlton: Can we start first of all with your table, figure 11.3A-3? Can you tell us a little bit about how this was developed? Does this, for example, represent a curve that resulted from looking at a series of specific technologies, as we found in the study that was done for the ministry?

Mr. Palmer: Going back perhaps to three years ago, we did some very extensive studies, looking at a large number of options in each of the market sectors. We tried to evaluate what the potential was for that option in the sector. We got together cost data for it and went through a fairly elaborate analysis for each of these options to determine what the costs would be.

We also used for comparison similar kinds of cables that had been developed by the Bonneville Power Administration, where it has been continually helpful to us in many of these deliberations.

Mr. Charlton: So for the most part, this is a study of the curve that results from efficiency improvements of specific technologies?

Mr. Palmer: Yes, that is correct. I think I would have to add to that by saying we are doing very careful audits now in each of the markets to kind of substantiate whether these numbers are completely correct. As we get closer to actual major programs, we want to sharpen up our financial projections and we are doing that through tests and demonstration markets.

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Mr. Charlton: Just flowing out of that, we move to figure 11.3A-5, which is your research and development, where I think you put it fairly clearly to us that you are doing some major work in terms of audits in the residential and commercial sectors, and out of those audits costing the improvements that can be made, that are indicated by the audits, by various technologies. In other words, you are doing several ongoing studies now.

I guess it is fair to say that what is represented in this first table is your first shot at the game in

terms of a number of specific technologies, but there should be a significant number of additional things flow out of the studies that are currently going on.

Mr. Palmer: Yes, you are quite correct.

Mr. Charlton: In terms of the studies that are ongoing, especially the two where you are actually out doing audits, and then out of that building potential in terms of different potentials for dealing with what the audit shows, can you tell us when you expect to have those studies completed in the residential and commercial sectors? Will we have those studies and the development of the alternatives in terms of making the necessary energy changes, technological changes and so on, by 1990?

Mr. Palmer: Yes. Let me deal with each market separately. In the residential market, our present, quite intensive audit of electrically heated homes in the province, that work will be largely completed by the end of this year. The audits have been done and the analysis is being done. I am not sure whether we will get out actually doing a few houses this year just to test our estimates or not. If we do not get out before this year is out, we certainly will in the coming year. So we are getting pretty close to the end of our work in the residential area.

We have also had, as I have mentioned, 500 customers or thereabouts on time-of-use rates in the residential market in Ontario for several years. We have some pretty good notions of how residential customers might react if time-of-use rates are introduced, and where the cutoff should be. If a customer uses only a few hundred kilowatt-hours a year or a few thousand, there are probably no economics in having him have time-of-use rates. But if he uses 20,000 or 25,000, the economics are probably quite good.

In the commercial market, we are probably two years away from some of the major programs that we might introduce, such as commercial lighting, although we have something like 12 or 15 contracts out and work being done currently by consulting engineers, architects, contractors and so on.

You will hear something more about the industrial market this afternoon from our two speakers in that area who can give you some sense of that.

Mr. McConnell: If I may, I would like to introduce Dr. Vicki Sharpe, who has joined our panel this afternoon and will be making a presentation after Mr. Palmer.

Mrs. Grier: I appreciate the extra information you gave us on figure 11.3A-11, but I just want to

be sure I understand correctly. What is the date of the target of 2,000 megawatts of incentive-driven savings?

Mr. Palmer: It is the year 2000.

Mrs. Grier: The technical potential, what is that in megawatts?

Mr. Palmer: It adds up to almost exactly 4,300 megawatts.

Mrs. Grier: What is the breakdown of current usage in the three sectors?

Mr. Palmer: It is roughly equal; about a third, a third and a third.

Mr. McGuigan: I have some technical questions. I understood, and I hope you will tell me whether I am right or wrong, that the old motors made several years ago when copper was cheap—they would not stand a high temperature rise because the asphalt-type insulation would melt—because they had lots of copper in them, they were very efficient. The new motors have less copper and better insulators and they will stand the high heat rise. Is that still correct?

Mr. Palmer: Yes, that is still correct. There is good reason to believe that motors built in the 1950s or early 1960s were more efficient than the present standard lines of motors for the reasons you have mentioned. The manufacturers have found ingenious ways of cutting down the iron and copper and still get the power out of the motor, so to some extent there has been a slippage in efficiencies over 30 years.

Mr. McGuigan: Does that apply to large motors?

Mr. Palmer: No, it does not. Once the motors get above 150 horsepower or thereabouts, the customer who is ordering one can specify a level of efficiency and other particular requirements that he has and the manufacturer will provide those, so very large motors tend to be quite efficient. If you were to go into, say, a pumping station of the city of Toronto and see very large induction motors driving pumps, you would also find that those motors were extremely efficient, because the city has specified a high-efficiency figure.

Mr. McGuigan: What sort of range is there between a high- and a low-efficiency motor?

Mr. Palmer: It is about 10 per cent between the small motor—

Mr. McGuigan: High ones would be around 85 or so.

Mr. Palmer: I think the high-efficiency motors in the small sizes, which for me is between one and 15 horsepower, are probably in

the high 80 per cent efficiency, whereas the standard motor is around 80 per cent, in that range, in rough numbers.

Mr. McGuigan: What role do variable-speed drives play?

Mr. Palmer: The variable-speed drive is essentially an electronic process which controls a standard polyphase induction motor. It changes the speed of the motor to match the drive.

At Inco they grind various grades of ore, various sizes of ore, all in the same mill. When they are grinding a particular kind of ore, they can change the speed of the motor either up or down to exactly match the most efficient grinding speed. That way they can get faster grinding and use less energy.

It is an electronic device for varying the speed of the motor to match the load.

Mr. McGuigan: They get a lot more efficiency out of their electricity use by having that type of a drive.

Mr. Palmer: That is right.

Mr. McGuigan: It is not a gear-type drive.

Mr. Palmer: No, it is electronic.

Mr. McConnell: Just to add to that, Mr. McGuigan, in the industrial processes there is the question of the electrical efficiency of the motor, but there is also the question of the overall energy efficiency of the process.

For example, if you compressed some fluid and it had a certain volume that you wanted and in the process you desired less volume, you could put a control valve in that would throttle it and in that control valve you would be wasting energy because you would be trying to restrict the process. You would have put the work into it, and then you are turning around and wasting it by using a throttle valve. With a variable-speed motor, instead of having a throttle valve, you can use less energy and then just vary the speed of the motor to get the volume of throughput that you want.

By and large, Ontario Hydro has not only to be engaged in looking at electric motors, but basically we also have to work with the industry in working with the process. It is there that the variable-speed motor starts to play a role, and you have to understand the process.

You can see the massive amount of work that is implied, because every industry has a different process, so you cannot standardize it. This is another one of the reasons why this stuff all does not happen instantly. It is slow, hard work over a period of years.

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Mr. McGuigan: Just one final, short question: Is a variable-speed drive an expensive item?

Mr. Palmer: Yes, the cost is fairly high. I think Dr. Sharpe will probably be talking a little on that. Are you going to talk about Inco?

Dr. Sharpe: Yes, I am.

Mrs. Sullivan: I have two questions that are unrelated. First, I am wondering if conservation techniques themselves may add to the ultimate load. I am thinking of an article I have just read about the Fram Construction demonstration home in Brampton that Hydro is participating in, and it is anticipated that that house will have a life-cycle decrease in energy costs of 80 per cent over the period. It seems to me that in itself is very attractive to a new home buyer, and indeed, if electricity had not been used or the particular conservation equipment had not been used in that house, it might not have been quite as attractive.

Mr. MacCarthy: That is very definitely an issue, and I think you are absolutely right. As we pursue a more energy-efficient process, it may become more attractive to customers and more customers will pursue that process. It still does not seem to me to suggest that we move away from pursuing a more energy-efficient goal.

Mr. McConnell: I think you can split that into two parts. If you take a home that, say, is already electrically heated, and let's say for example that it is heated with a resistance-type unit and we should interact with that customer and influence that customer to put in a heat pump, there would be a clear reduction in the amount of electricity required for that existing application. So in the particular case, I think we move forward into the future with some degree of confidence that this will reduce our electrical demand of existing loads.

But as Mr. MacCarthy has indicated, when you are talking about providing incentives for customers and you are talking about new applications, when a new home is being built; as we indicated in the case of the 1986 select committee, there was a bidirectional effect—we were causing the province to become more efficient, and the province would be using less energy to get the job done—but we recognized that we might be, in fact, moving towards making the electricity more competitive and therefore increasing the demand for electricity in that sense.

As Mr. MacCarthy says, it is a very astute question you ask, and it is one of those things that produce some uncertainty on our part as to just

what the net effects are going to be of electric efficiency improvements.

Mr. MacCarthy: If I may elaborate a little further, I was talking to a utility in the United States that had an incentive program for more energy-efficient air-conditioners. What they found was that when they offered the incentives at the different levels, different sizes of air-conditioners, with the incentive the pattern of customer response tended to be that they moved up a level in the size of the air-conditioner because of the incentive dimension, so that, in fact, it was a more energy-efficient air-conditioner but it was a bigger one.

These are issues that we are going to have to address, but again, it is still, in my mind, the right direction to pursue.

Mr. Chairman: Mr. McGuigan, did you have a brief supplementary?

Mr. McGuigan: Yes. It is something like the smoker who smokes mild cigarettes but now smokes more of them. It brings up a question. Is the R-2000 type of house not adaptable, say, for gas, especially in the light of the very high efficiency gas furnaces that they have; or is a high-efficiency house inherently an electric house?

Mr. MacCarthy: No, it could be used in the gas application—no problem there—and it would reduce the cost of the gas application as well.

Mr. McGuigan: So if the gas people put on a drive, say, in competition with your R-2000 electric, there is a field there for them?

Mr. McConnell: As far as the province is concerned, that would be good. Anything we do that leads to other forms of energy being used more efficiently is good.

Mrs. Sullivan: Referring to figure 11.3A-11, I am interested in the predictions relating to the savings from the information-driven programs and incentive-driven programs. I assume that the years between 1989 and 1993 in the incentive-driven programs are really those years that are going to be used for the program development and marketing and implementation and so on, and then you really add it between 1993 and 2000.

I am quite interested. When you look at the targets, you are expecting that the information-driven, basically natural conservation, will provide a saving of, say, 400 megawatts in 1993, and your target is 1,500 in 2000. You are saying that there is a change of 1,100 between 1993 and 2000 with no incentive, yet really not an awful lot more than that is incentive-driven in terms of the

ratio of increase between 1993 and 2000. I wonder what the assumptions are behind that. Why do you think that information-driven programs will indeed provide the results that they will, as compared to the incentive-driven programs?

Mr. MacCarthy: The perspective that is identified here is that a more aggressive thrust on the information side will be more effective in terms of an early response and that will continue. With the incentive dimension, it will be accelerated over the years and then it will be the bigger bang in the latter years of the program, because to 1993 we have a relatively small amount on the incentive, but then a substantial pickup beyond that.

Mrs. Sullivan: The other thing that struck me from this section was a discussion relating to the takeup. Certainly, at this point in your development what you have seen is that people, whether they are in residential, commercial or industrial sectors, are really interested in programs specific to their application, and how you will take that into account as you are planning and predicting, working towards these targets.

Mr. MacCarthy: I do not want to imply undue precision to these targets because we are relatively new in the territory and these are our best estimates based on some of the studies that we conducted, but philosophically, particularly with the incentive, there is a natural correction provided. If we offer an incentive and nobody picks up the incentive, then we have to reassess whether it is either fundamentally unattractive or we have not offered enough of an incentive. If there is a substantial pickup, then we can accelerate that program or perhaps moderate the incentive. We see us shifting as we go and gaining experience.

Mr. Matrundola: Mr. Palmer, about this incentive business, you mentioned the memo that you received in your office re Hydro having made an impact on high-efficiency when a certain industry saved about \$3,200 in the purchase of regular electric motors, rather than the high-efficiency ones. Am I correct?

Mr. Palmer: Yes.

Mr. Matrundola: Unfortunately, the result of that case is that the industry saved the \$3,200 in purchasing regular electric motors, which was a negotiating strategy by the industry, but in fact Hydro did not and does not save any energy.

Mr. Palmer: You are so right.

Mr. Matrundola: Although I am glad the \$3,200 was not paid, at least we saved on that score.

I wonder if an incentive could be worked out and perhaps be split between the manufacturers of high-efficiency electric motors and the customer. In such a case, I believe we would achieve the objective of high efficiency and the saving of energy.

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Mr. Palmer: If I have understood you, you are saying that we should provide some incentive to the manufacturer and the other parts of the chain to stock and carry the motors, so the customer can buy them.

Mr. Matrundola: That is quite right. If you simply give the incentive to industry, it goes to the manufacturer and says, "Look, we will give you the reduction in price for your regular motors." In the long run, the customer, paying for more energy, will spend the money anyway, and we really do not save anything. Whereas if the incentive was partly to the manufacturers so that they are motivated to manufacture more high-efficiency electric motors, then the customer would also have an incentive to buy, because then they would be splitting the incentive. The customer, in turn, will save energy as time goes on, but really, Hydro will save energy in one lump.

Mr. Palmer: Quite so. That is a very astute observation on your part. Generally, this is the direction in which we are taking our test market at the moment. How can we influence the supply channel by spending some of our money there rather than at end use? I think that is probably the right approach.

Mr. MacCarthy: If I may comment on that, one of our earlier concerns was that it does result in a saving to the customer and it is not just an increased profit to the manufacturing side. You have to build in that control mechanism.

Mr. Matrundola: I agree with that, but I am more interested in seeing that Hydro will save energy, because it costs so much to produce it. The incentive and the saving to the customer are fine, but we also have to look at how we can save energy, because I believe this is one of the major goals of Hydro.

Mr. Charlton: I do not care who addresses this. Has anybody talked to the Minister of Energy (Mr. Wong) about the possibility of getting at some of these problems through extending the efficiency standards legislation?

Mr. MacCarthy: We have had discussions with the Ministry of Energy on the Energy Efficiency Act implications and the kind of areas that might be pursued under that act.

Mr. Charlton: I think the act was very clearly designed, though, for residential appliances.

Mr. MacCarthy: That was the hope.

Mr. Charlton: There is no reason we cannot take on some of these issues you are running into in terms of extending standards to a number of other items where we know there is much better availability.

Mr. Chairman: Perhaps we could move on to the next segment, which is on load-shifting options.

Mr. M. C. Ray: I just want to pursue the issue of product development. I would like to ask, first, what Ontario Hydro is spending on product development and research, and second, whether any initiatives are being undertaken to tie your initiatives in that regard into the recommendations of the Premier's Council for competing in the world economy. In other words, is there any force at play within Ontario Hydro now to have its corporate actions parallel the policies of this government as evidenced in the Premier's Council report?

Mr. McConnell: If it is acceptable to you, we will be having prepared presentations on the subject of research and development, one by Hedley Palmer and one by our director of research. If it is acceptable to you, what I propose to do would be to have those presentations made and then maybe respond to your question in the context that you put it.

Mr. M. C. Ray: If you could, I would appreciate that.

Mr. Chairman: Perhaps we could then move on to the next section on load-shifting options. We will break after that is done and take questions after. Mr. Argue, you had a brief question?

Mr. Argue: Just one question: Mr. Palmer, you mentioned that you were spending or had spent a considerable amount of money on various energy efficiency programs. I was wondering if you could tell the committee how much you have spent, say, in the last fiscal year on these programs.

Mr. Palmer: Maybe \$20 million.

Mr. MacCarthy: I think it would be of that order of magnitude.

Mr. Palmer: The next presentation deals with load shifting. It is strategy element 3.2, which says, "Demand management programs aimed at shifting demand from peak to off-peak times will be selected to respect system limits on the usefulness of load shifting," and, "The choice

between load shifting and energy storage will reflect the costs and benefits of each option."

Over the proceedings of the last few days, the question of load shifting has been discussed on two or three occasions. The business of energy storage has been discussed as well. I had both of those on my agenda and because you have had quite a bit of discussion, I am going to attempt to go through the paper here reasonably quickly since I believe there is a significant understanding already.

Load shifting involves influencing the timing of electricity and moving such use from peak to off-peak periods.

It can shift the total cost of production by increasing the amount of electricity produced from less expensive fuels during the off-peak periods.

It reduces or postpones the need for future generating capacity.

Like demand reducing options, the cost savings from load shifting benefit all customers.

As well as peak shifting, which has primarily been looked on by some as a winter activity, it is now becoming significant in the summer as well. There is a large potential for load shifting through the use of electrothermal storage and there is some of that beginning to be installed in major office buildings around Toronto. The purpose of that is to reduce the daytime load in the summertime. I think it was fairly clear from last week that the time has come in our system when that will be advantageous as well as wintertime shifting.

As summer peaks rise due to the increased use of air conditioning, there are increasing transmission benefits from summertime load shifting. This is because the ability of the lines to carry power declines as the temperature rises.

I have a chart here which I hope will give you some feel for why there is a system limit of 1,000 megawatts. Ontario Hydro has a very flat load shape during each 24-hour period. Indeed, I believe it is one of the very flattest in the whole world among utilities, often running, by the usual figure of merit, around 88 per cent to 90 per cent load factor, which means that of the peak load each day, 90 per cent of the energy within that envelope is used.

There is a certain amount of hydraulic peaking capacity on the system which one can move around during this period to help balance the load. In addition to just getting customers off the peak by load shifting, we have some flexibility in connection with ability to move our hydraulic peaking over the 16 daytime hours. When we talk

about load shifting, we need to get the customer's load moved out of the 16-hour period into the period from 11 p.m. to 7 a.m. It requires a major shift of the customer's load; we are not talking about an hour or two around the middle of the afternoon.

Taking those factors into account, on our peakiest day and our highest load, about 1,000 megawatts maximum would be enough to make that line practically a straight line over the 24-hour period on the highest load day in the winter.

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We have talked about rate-induced shifting. Time-of-use rates are going to make a significant impact on filling up that valley. We have some figures to show that it will be a major component of load shifting opportunity. The customer's opportunities are in water heating, cool storage and a number of other examples. Some of them are listed in the material there, but I might just touch briefly on a couple of them.

In a gold mine in northern Ontario that we have been looking at, there is substantial opportunity to store compressed air, which is widely used for air handling in the mines and in abandoned or unused mineshafts during the night-time periods, and then to draw it out in the daytime to partially meet its needs for compressed air during its daytime operation. It is an example of load shifting.

Other applications include electric forklift trucks in industry and some mines in northern Ontario that have potential for pumping water; that is, pumping the water out of mines in the off-peak period. I understand Inco is one location where that is potentially possible.

I have mentioned a couple of times that we have a number of time-of-use experiments that have been going on. There is one in the residential customer's category and another among the commercial customers, which is of more recent vintage. Our plans are to introduce these rates to major customers in the province, those above 5,000 kilowatt demand starting January 1, 1989. They will also be supplied on an optional basis to municipal utilities in 1989.

We have a number of direct loads; that is, controlling customer's loads directly from a central station. We have a number of demonstration and test projects going on in that area.

I mentioned to you before and I will repeat it now, there is lots of technology around to do that. We have some concerns about the robustness of this technology and its reliability, so our tests are primarily directed in that area.

There is also some customer resistance to the concept of having Big Daddy control their loads from some central person, so they lose the power of choice over when and how they use their equipment. That has to be taken into account.

We have technology-based programs in all of the market sectors. We anticipate that by 1993, we will have picked up 580 megawatts of load shifting and that will come primarily from the time-of-use rates application and to a smaller extent from direct load control on application.

There is no doubt in our minds, as Mr. McConnell said, that it is quite feasible, possible and practical for us to achieve all the system can stand in the way of load shifting by the year 2000. Our estimates are that it is around 1,000 megawatts.

I just want to say a quick word about energy storage. Mr. Snelson and Mr. McConnell dealt with that a little earlier, so I will just try to touch the bottom lines of it. It refers to using the system in some way to store energy, perhaps to store water through pump storage. Another example given was to store it through batteries or something of that kind. But the idea is to use the surplus generation during the night-time to provide energy to store water or energy in a battery and so on. You regenerate it during the next daytime to meet the peak load.

Our studies show that it is more expensive than customer load shifting. We do not anticipate that over the planning period we are talking about now, we will be pursuing those options, at least not actively, because of the higher expense. We would like to pick up all we can from customers so the customers may have the advantage through discounted rates and so on before we begin to build any energy storage systems. It is quite possible they will not be needed, but it is a component which has to be thought about in this whole process and the select committee should be aware of it.

That is not a very good job of covering that particular one, but if you have any questions about it, I would be pleased to answer them. That concludes this part of the presentation.

Mr. Chairman: Thank you, Mr. Palmer. I think we can adjourn now until 3:30 p.m. and start up with questions relating to this section sharp at 3:30.

The committee recessed at 3:06 p.m.

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Mr. Chairman: Perhaps I could call the late afternoon session to order and give everyone a chance to take his seat.

In order to move ahead on our agenda, what I propose we do is that after we have entertained questions relating to Mr. Palmer's presentation, we will then hear Dr. Sharpe's presentation, and I think we could do that until 4:10; then move on to Mr. MacCarthy's presentation, which I think we could deal with by 4:50; then Mr. Palmer's, which we could deal with by 5:30; and Mr. Palmer's second presentation by six.

With agreement, I will put a time limit on how long we are going to take to deal with each, basically allowing 20 minutes for discussion and 20 minutes for questions for each of those items. I believe, given the pattern the committee has developed, that should allow us to proceed. Seeing no objections, we will do it that way. Are there any questions?

Mr. Charlton: Are we on the load-shifting questions now?

Mr. Chairman: Yes. I just wanted questions relating to Mr. Palmer's presentation before the break.

Mr. Charlton: Mr. Palmer, when you were making your presentation, you set out for us the basic goal of load shifting, and I think that is reasonably clear to most of us. You talked about rate-induced load shifting and some of the opportunities you have looked for. In addition to what you show in this presentation today, are you talking about up to 2,000 megawatts by the year 2000?

Mr. Palmer: On load shifting, 1,000 megawatts.

Mr. McConnell: I think it was clear in his presentation, but I think it is important to reinforce that the 1,000 megawatts is an upper limit, because that is all the system will take. Otherwise, we will end up with peaking some other time of the day. For those people who come along and say, "One thousand megawatts; there is no reason why you cannot achieve 3,000 megawatts," there is. One thousand megawatts is all it is possible to achieve.

Mr. Charlton: I guess I would like to get a little further into that and understand better why. I think, again, I understand what you are saying when you say that if you go too far with load shifting, you just end up having to peak at a different time.

Mr. McConnell: That is right.

Mr. Charlton: You can correct me because I do not know what the bottom line is in terms of what I am going to ask, but I know, for example, the two companies that I am most familiar with are Stelco and Dofasco in Hamilton, mostly

because my family and my neighbours all work there. What you have got are two companies that are running three shifts a day. Both of them run their major production shift on the day shift. The afternoon shift is their second-largest production shift, and night shift is their smallest production shift.

I would assume that also means, correspondingly, that their highest consumption of electricity is during the day, their second-highest consumption of electricity is in the afternoon shift, and their lowest consumption of electricity is on the night shift. I understand what you are saying, that if you got both Stelco and Dofasco to switch their major production to the night shift and you started getting everybody else in the province to do that, eventually you would just move where the peak occurs.

Is there not some potential, in this three-shift industrial society in which we live, of staggering companies; i.e., you have one of them doing its major production on the day shift, you have another one doing its major production on the night shift and a third company doing its major production on the afternoon shift?

Mr. McConnell: Yes. I think that is an option in terms of how you achieve your load levelling, but you must recognize that when we talk about the shape of the electrical demand where the Ontario Hydro system is a whole, it is the net effect of hundreds of thousands of consumers. Mr. Palmer gave you a graph that showed you what that net effect was. The net effect was that from 7 a.m. through to 11 p.m. for the months of December, January and February, it comes out a long, flat period.

Even though on the 4-to-12 shift there may be less production at Dofasco, there are other people turning on their stoves, lights, televisions and what have you in the evenings. Basically, what we are trying to do is manage the total result. With the time-of-use rates Mr. Palmer described, that will to a very large degree achieve the result we want. To the extent that it does not achieve the result we want, he talked about helping it through further incentives to make it happen. But there is a limit still of 1,000 megawatts.

Mr. Charlton: That is exactly what I am getting at, though. I am saying there is a certain amount you can do just by straight rate incentive, where a company will find that, as a result of that incentive, it is in its best interest to do such-and-such.

In addition to that, I was asking if there is not also some additional potential, in terms of how you manage your load over a 24-hour period, to

do some individual analysis and look at who it may be useful for you to approach.

Mr. Palmer: There is a famous case study in the United States involving the Kohler Corp., which makes plumbing fixtures and so on. In the face of time-of-use rates, it simply stopped daytime production and started producing at night. This study has to do with the enormous social problems that caused in the community in Minnesota; I have forgotten where they are located. So this business of companies faced with time-of-use rates deciding to move their staff completely into, say, the third shift of the day has enormously important cultural implications.

Mr. Charlton: Yes, and I do not think we want to see that happening.

Mr. Palmer: While that kind of thing is certainly technically possible, there is some real doubt in my mind whether the utility should urge major companies into that kind of mode of operation.

Mr. Charlton: Yes. I would not want to see you urging that on a Stelco or Dofasco. They cannot go into one shift, anyway, in companies like that. They always run three shifts because they have to keep the furnaces going. Even when they have a strike they have to bank furnaces and that kind of stuff.

Mr. McConnell: Coming back to your example, if we have time-of-use rates, and we will have, in which the cost of electricity is lower at one time of the day than it is at another, industry, in interaction with its union and employees, has to make the kinds of decisions you are talking about. It is not Ontario Hydro trying to shove it down their throat.

Mr. Charlton: No. All I was getting at is that in addition to any province-wide rate incentive programs you go after for load shifting, it just seems to me that there is a potential for you, in terms of managing load, to be approaching some manufacturers individually to do something different than what the others in that municipality are doing to try and better balance the system in that municipality. That is all I am getting at.

Mr. MacCarthy: In fact, we have done this in some instances, where we have approached specific companies, some that were in financial difficulty, with particular rate packages and suggestions on approaches to see whether, by shifting to a night shift, they could substantially reduce electricity rates. Some have worked and some have not because of the social dimension. The one I am thinking of did not work because of union difficulties, but some have. Some firms

have survived that would not have otherwise survived. That is a particular incentive.

Mr. Charlton: In that vein, you could get into that kind of stuff. You could try approaching Stelco because, since it has dropped from first place to second, it will be looking for whatever competitive edge it can get to get back into first place.

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Mr. Chairman: Could I remind all in the room that with the air-conditioner on, Hansard has a little difficulty picking up the voices. If people could make an effort to speak directly into the microphones it would be very helpful for the written record.

Mr. McGuigan: I want to speak on behalf of small business and to use my own experience as an example, running a small fruit and vegetable packing line.

If you offered me free hydro at night, I would not take it, based on the fact that I would probably find some people to work on the line at night, but in a family-operated business it is the family that provides the technical expertise and the supervisory help and so on. They cannot work 24 hours a day. I think you would find that in thousands and thousands of small enterprises it is simply not practical, although I do not knock load shifting. I think there are a lot of limitations in small business.

I had a technical question again on fork-lift trucks. I have watched the people who have electric ones. Whenever they are not actually operating, they have them plugged in. I had it explained to me that they never want to run the battery down because if they do, it does not take too many cycles between high and low, or high and dead, and the battery is ruined.

Mr. Palmer: You are correct.

Mr. McGuigan: What opportunities are there for storing electricity with those people when they follow that practice?

Mr. Palmer: The design of fork-lift trucks basically is that they can comfortably run through an eight-hour cycle or something of that kind—a normal shift. While they may have lulls in production, they go over and plug them in when that happens. But one charging every 24 hours is quite acceptable to a fork-lift truck operator.

Mr. McGuigan: So you might have to overcome a bit of a myth there with those people.

Mr. Palmer: Right.

Mrs. Sullivan: I would like to refer to figure 11.3B-5, the expected early result. If we extend

those results to the year 2000, when you are looking at total changes in 1,000 megawatts with really quite an early takeup in the targets, what would the breakdown be of the targets by residential, commercial and industrial sectors in 2000?

Mr. Palmer: I do not have that information. We can get it for you.

Mr. MacCarthy: My recollection is that it is predominantly industrial, but we can get that specific information.

Mr. Chairman: Could we move on to the next section, Demand Increasing Options? If we can, we could close off discussion and questions around 4:20 p.m. and maybe have 15 or 20 minutes for the presentation and the same for the questioning.

Dr. Sharpe: Good afternoon. Can you hear me all right with this?

Mr. Matrundola: Switch off the air-conditioning.

Mr. Chairman: I am afraid the room would heat up very quickly with the air-conditioner off at this time of day. The sun is coming right in the windows behind us.

Mr. Matrundola: As you wish.

Dr. Sharpe: This afternoon I am going to talk to you about strategy element 3.3, which basically states that demand programs aimed at increasing demand will be pursued where there are benefits provided to customers in total.

Demand management programs are frequently aimed at reducing the amount of demand but also they are aimed at increasing the amount of demand. This situation occurs because there are opportunities to substitute electricity for inefficient uses of other types of energy or inefficient uses of existing electrotechnologies so that the overall result of that substitution is one of increased process efficiency. In these situations, the use of electricity must meet certain criteria, the key ones being increased profitability, improved productivity and improved product quality. If this is the case and these criteria are met, Ontario Hydro will help its customers identify these needs and ensure they are aware of the opportunities.

The following presentation will go into analysing the rationale for looking at these process efficiency efforts, look at some successful examples of implementation of electrotechnologies and, finally, look at some new technology development areas.

Electricity as a component of the total energy market in industry has increased over the years.

Therefore, if industries are going to remain competitive, they are going to have to look at the way they can improve their process efficiency and cut costs. It is something which changes with time. To this end, Ontario Hydro is committed to helping the customers maintain their competitive edge in Ontario. This recognition of the impact of the use of electrotechnologies to contribute to competitiveness is not one Hydro owns exclusively. The Tennessee Valley Authority, a major utility in the US, Electricité de France, their national electricity board, and the UK Electricity Council have also come to this conclusion. It is something they are all working towards.

If I might define my interpretation of electrotechnology, it is really the application of electricity in the forming and finishing of products in a manufacturing process.

The goal of the parts of Ontario Hydro in the energy management branch which work with electrotechnologies is to assist Ontario industry to achieve the efficient use of energy through the application of electrical processes so as to increase their productivity, competitiveness and product quality. There are many electrotechnologies, and I thought to illustrate some of them would give you a feel for the things I am rambling on about, because electrotechnology is such a long word.

The first group on the right-hand side, the electromotive group, is one that contains motors and the things that can help control the rate of use of those motors, the drives or variable speed drives we discussed earlier this afternoon. One thing perhaps I should mention is that the combination of the drive and the motor that provides some kind of benefit is one that is quite specific to an application and this has to be quite well evaluated before anything is done.

The central group, the electrothermal technologies, is really a very broad group. I think we could say that in general they are involved in curing and heating, drying and melting of various materials. The technologies can be used in a number of those different areas. One technology could be used for heating and it could also be used for drying. For example, with the ones you have there, microwave can be used for drying and for curing. Again, there are a range of options and combinations there.

The final category I want to talk about is the electrochemical technologies. This is essentially the production of chemicals that are driven by electricity. In a way, the next group, advanced batteries, you can think of as really just the same as your car battery, except that rather than having

acid and lead, you have somewhat different materials in the battery.

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The final category listed there is membranes. People always wonder about this one. It is really the use of a selective filter medium, just like making coffee, where you pour through a fluid and then things you want to selectively retain on that filter are kept and the things you do not want pass through. The only way electricity is involved in this is just pumping the fluid through faster than it would do under gravity. That is the final category.

Electricity is a processed energy form and therefore fairly expensive. If one were to look at the direct substitution of electricity with other forms, fossil fuels, gas and oil, obviously that would not make sense. Direct substitution is not where electricity is of value. The point I want to make with this overhead is that there has to be a strong rationale for introducing an electrical application into industry based on the unique characteristics electricity has to offer in particular applications. It is very application-specific situations where you actually draw these benefits about which I want to talk.

Having said that, I will perhaps list some of the remarkable characteristics electricity has. For example, plasma torches and laser, which I will be talking about a little later, are able to reach temperatures of thousands of degrees centigrade very rapidly, and that is a unique characteristic.

The technologies of ultraviolet, microwave and infrared will just hit the surface of whatever it is you want to treat, such as a thin layer of adhesive on a paper or something. That capability just to touch the surface and not go any deeper is one that is very important in not damaging the thing that is underneath.

In contrast, there are other technologies, such as induction, where it is the reverse. It penetrates quite deeply into the material you want to form or shape and it transfers that heat very rapidly. Again, there is a very specific characteristic for these different technologies.

That is what they have to offer. There are tangible benefits which come from these characteristics. I have listed a few of them on the next overhead. In the situation of having 1,000 degrees centigrade reached very rapidly, you can see that that capability could easily increase productivity in a particular application. That was the first one.

A better working environment can come from a number of areas. For example, the containment of heat, because it is not transferred through the

air, means that you do not heat your surrounding environment. That makes it nicer for the people who have to work on, say, a line somewhere. That is one of the ways it can contribute to a better working environment.

The reduced waste benefit I could perhaps describe in this way. If you have a laser cutting a piece of metal according to a preset pattern, the accuracy of that cut is so great that you do not have the amount of wastage you would in the old ways of cutting and machining. Therefore, there is a reduced waste of your actual initial material which can obviously contribute to cost savings.

Enhanced product quality often comes, again, from the capability to heat in a very selective fashion. In the applications where they are right for electricity, there is lower energy consumption per unit of production. Perhaps if I pull together all of these, you can see that the overall impact is an increase in productivity and reduction in costs and therefore an increase in the profit margin for the end user.

There have been many examples of successful implementation of electrotechnologies. Quite a few of them have been documented through the promotional series, Initiatives and Paybacks. I want to go through a couple of those.

The first one is a situation that occurred in a foundry out in Mississauga where their business was producing aluminum and zinc alloy castings and specializing in electrical switch gear. Essentially, what they had was a gas-fired furnace doing the melting of their aluminium billets as they came into the foundry. Ontario Hydro, with the customer, ran a test to compare the relative capabilities of an electrically fired furnace versus the gas-fired furnace.

I have listed some of the benefits that were definitely achieved by the electric use. Perhaps most notable is that there is a better working environment because, as I mentioned before, there was less heat loss into the atmosphere. This impinged on the lower labour cost you get here, because the heat from the gas oven used to be so bad during the summer that they had to send people home. I guess there were some happy faces there.

The control of the temperature was more accurate with the electric furnace. This improved the quality of the castings and it also meant that there were lower melt losses. Overall, the cost per pound of metal poured was reduced by 12 per cent. That was sufficient incentive, along with all these other benefits, for the customer to be very taken with this and, in actual fact, to install a unit in 1986.

What I want to say from this is that you can see, when we are talking about customer satisfaction, which is the cornerstone of the work we are doing here, that although there may be some very real measurable benefits in terms of energy savings and cost reductions, there are also other ones which are very tangible, such as improved working environment, which we can put a dollar value on, such as not losing your shift in the summers. That was the point I wanted to make there.

If I can move on to the other example, we had an auto parts manufacturing company out in Cambridge experiencing a severe bottleneck in the production of oil filters. They had to cure the glue before they could stick the oil filters together and that process, going through a gas-fired oven, was taking way too long. They also had problems with this great 80-foot conveyer belt running through a massive gas-fired unit. They had different-sized filters that needed different amounts of curing and these things kept being either not cured properly or overcured and burnt. The fact that they had all this being dealt with on one conveyer belt meant the whole thing collapsed periodically and there was a complete shutdown, because they could not get near this oven for ages as it was too hot.

They were delighted when they tested an electric-fired infrared process which cut down the heating time from three and a half minutes to a matter of seconds. The way they dealt with the different sizes of filters was that they had three of these infrared units. They were only 10 feet long, so they found themselves with the capability to deal with the different sizes. They reduced all this usage of space; they have got a lot more space to work with. Their bottleneck was gone. The accuracy of the heating was greater through the control, so it meant the scrap wastage was reduced by 30 per cent. In customer terms again, their bottom line, they could get a payback in 1.8 years. This was installed in 1987.

Getting back to a topic of some interest to some of you here, variable speed drives, this particular project is really a pilot installation to check the performance and reliability of the capability of the drive in this application. That is something else I really want to emphasize, that using technologies in industry, you do not just stick them out there and hope it works. These things cost a lot of money, and we would not be comfortable unless there were a thorough examination of their capabilities to make sure they could deliver what they are supposed to and make sure they are safe and reliable. So we do go

through a number of demonstrations. This is an example of one of them, which is being supported by the Ontario Ministry of Energy and the federal Department of Energy, Mines and Resources.

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In this situation, the ore was being crushed, using a fixed speed drive, and we put in a variable speed drive. We have found that there is an increase in process efficiency. Also, the new system grinds the ore a lot more finely, which means that down the production line, there is a reduced need for further grinding.

This is a point where I want to talk about another issue, which is that when one looks at the load impact of a lot of these applications, one has to be quite careful about generalizations. In this particular use, what the company did was put in a motor twice the size of the one it already had for this drive. That increased the electrical energy use, but because it produced a better grind in the ore, it meant that further down they did not need to use as much energy. So the overall production process saw a 12.5 per cent cut in electrical energy use. This did decrease demand, although actually the one step increased it. As I say, that is something I wanted to draw your attention to.

When we do a lot of this work, we want to make sure there are benefits that are fairly broad. If you look at the last point there, there are about 54 milling operations throughout Ontario that have this type of process and, therefore, if we demonstrated this works, we could have a real benefit to the demand management efforts.

Another point I want to make is that we are keen on technologies. People go on about technocrats and we get pretty wound up on all this stuff. But there is a deal of element of objectivity in that we really do look at the feasibility of using these technologies. If it is in the interest of the customer to go ahead and use that application, we will say so. If it is not in his interest and there is no net benefit to the industrial customer, we are also going to point that out.

I wanted to give you an example of that, where we were approached by a large industrial customer who was heating an ore slurry in order to remove the ore. They had a steam injection system and they had heard all these good things about electrotechnology. They said: "We would like to use some. How about you doing a study for us?" We carried that out and we found that microwave was really too expensive and could not handle the large volumes of slurry. Induction was too expensive and was not very practical. The other technology was resistance. This was

economical, but because the elements had to sit inside the slurry, which was very acidic and therefore corrosive, that would not work either. It really was not technically possible.

Our recommendation to the company was: "No, don't go with electricity. Use the steam injection process you have right now. But here are a few suggestions about how you can improve your energy efficiency. These were to try to look at increased heat recovery and improved slurry agitation. That is an example of the other side of the fence.

The mandate of the product development group is to identify and assess and then develop new technologies which are not currently commercial already the marketplace. There have to be thorough research and demonstration efforts. There have to be demonstrations in order to prove out, as I said before, the capability of these applications. Dr. Mills will be talking a bit more about that capability of research that Ontario Hydro has.

I would like to give you a feel for some of the areas that we are working in, in our new initiatives.

Plasma torch: Plasma torch is almost like an oxyacetylene torch except that it is a lot more powerful and it is run by electricity. It is just like having one of these magic arms of power.

The application that we are actually looking into is to treat hazardous wastes. We are doing this in combination with the Ministry of Energy and the Ministry of the Environment, because obviously there are concerns with disposal of waste.

One of the things about this plasma torch, which is very high-temperature, is that it is able basically to vaporize a lot of carbonaceous material. The other thing is that it reduces the volume of all the other things, like glass and metal, that you cannot get rid of. In fact, in the tests that we have run, we have seen a 154-times reduction in the volume of the waste that is being tested, which, incidentally, is municipal solid waste. That has some implications for landfill sites, obviously.

The high temperatures mean that you get very thorough detoxification so that the bugs and the viruses, and also some of the nasty chemicals such as polychlorinated biphenyls and things like that, will be detoxified.

As I say, we have a pilot plant and we are testing it out to see if it will perform all these things and make sure it is doing things properly. That is one of the future areas.

Electrochemical synthesis is the technology. Essentially, it produces ozone, which is a bit like oxygen, only it can oxidize things even more efficiently. It is an equivalent to chlorine, but its equivalency stops at a number of points.

First of all, it oxidizes more strongly than chlorine. Chlorine interacts with hydrocarbons in water and you get halogenated chemicals, which are carcinogenic. Ozone does not do that; therefore, you do not get the same kind of concern with environmental impact. These are some of the reasons we feel ozone is a good thing.

We are also looking at ozone for bleaching in the pulp and paper industry. Currently, chlorine is used a lot there, and ozone may have some use. In fact, it is being tested by the Pulp and Paper Research Institute of Canada in a test pilot plant for that particular use.

Essentially, there are some benefits that we feel this electrochemical process has. It is also very flexible, so it may have the capability for load levelling. It depends on the application. This really is very much in the early stages. It is a paper study looking at market potential and technical evaluation.

The final example I want to give you concerns an electric arc facility, which is really like plasma, only it is contained within sealed walls, so it is a furnace. It is a 200-kilowatt facility and it will be located out at Lakeview. The thinking behind this is that this furnace has some primary uses in melting of metals, but there are potential applications in the abrasives and advanced ceramic areas.

What this does is that with the electric arc, the heating is submerged. As you can imagine, if you have it inside the furnace, you have very good contact with whatever it is you want to heat; therefore, it is going to do it well. There are very high temperatures, so you get good heating and rapid heating. Also, you can control the movement of the heating by using sort of magnetic controls, so you get a very even heat distribution within this furnace.

All of those things add up to the fact that you get process efficiency, so there are some real benefits. We want to be able to demonstrate these for a very important part of Ontario's industrial community, which is the metal producers, without their trying to mess about in their own plants to do this.

The pilot plant will be in place. I would like perhaps to talk very briefly about the first application of this pilot plant, which is to look at assisting Falconbridge with its new method for

deep roasting its ore to try to reduce sulphur dioxide emissions. Without going into it too extensively, the fact that they are changing the process means that there are some problems with the amount of energy that is required to be used, and we want to make sure that is minimized as much as possible. There also are some load-shifting and cogeneration possibilities with this application.

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Just to sum up, I think the message I have tried to bring across this afternoon is that there are unique production advantages that electricity can offer. Historically, there have been measurable benefits in industry from the application of electrotechnologies. We are working to continue to develop them so that Ontario Hydro can contribute to future industrial health and competitiveness.

Mrs. Grier: I would be interested in knowing about some of the technologies you have described in the examples that are there. While they may be new to Ontario, are there not examples in other industrialized countries where these are no longer in the pilot stage but are occurring?

Dr. Sharpe: That is true. We try to look at other examples and learn from them so that we do not reinvent the wheel. We certainly do that, but often, because of the applications' specificity, there is some need to do development here.

Mrs. Grier: In the application you just gave us as an example, can you give me some idea of—maybe it is just too generalized a question—(a) how much investment we are talking about and (b) how much electricity one of these people might use?

Dr. Sharpe: Certainly. If you want to look at the plasma test facility, figure 11.3C-16, on that pilot plant, Ontario Hydro has contributed about \$60,000 to the cost. Also, there has been some work done out at research, which we consider to be contributory or "in kind" costs.

We have seen larger contributions—I do not have the exact amount—from the other two ministries, and then an investment from the company itself to pay for the capital costs. In electricity use, 650 kilowatt-hours per tonne of municipal solid waste is roughly—

Mrs. Grier: In this example, has there been any application of it to hazardous industrial waste?

Dr. Sharpe: No, there has not been for this particular test facility, although obviously there is a real possibility there for hospital wastes or

airport wastes. In fact, when I mentioned PCBs, there is a facility in New York that has used a plasma torch for destruction of PCBs.

Mr. Chairman: Are there any other questions of Dr. Sharpe? Seeing none, thank you.

Mr. McConnell: While we are moving on to the next subject, I would just like to emphasize a point that has caused us a great deal of concern in the past. Although I am sure that a part of this committee understands it, if not everyone, we were talking about demand-reducing options this morning, strategy 3.1 and the pursuit of electrical efficiency.

Dr. Sharpe has just now talked about demand-increasing options and has pointed out how this can benefit Ontario as a result of keeping Ontario competitive through selective application of electrotechnology.

There are some people who accuse us of being confused, that we are promoting simultaneously demand-increasing options with demand-reducing options. What we are pointing out is that this is perfectly logical, because both are in the best interests of our customers, to be simultaneously promoting efficiency and also making this province more competitive. I felt I should emphasize that in case it went by.

Mrs. Grier: I think somebody must have got the Hansards of the last select committee's meetings and extracted all the nasty comments some of us must have made so they could answer them in the presentation this time around.

Mr. MacCarthy: We wanted to be prepared. I would like to spend a moment discussing municipal utilities and strategy element 3.4, which states: "The planning and implementation of demand management option will be undertaken in close co-operation with the municipal utilities."

I think I can move through this fairly quickly. I did talk a little bit about this the other day, about how Hydro recognizes the need for co-operation with the municipal utilities, and I identified some of the history in terms of the early evolution of Ontario Hydro.

There are some fundamental points. The municipal utilities are independent bodies under the Public Utilities Act and, as such, are not subject to direction by Ontario Hydro. It is true that we have a regulatory responsibility in the areas of rates and charges, the borrowing of funds, the use of surplus funds, etc., but the municipal utilities are independent bodies. As we approach the demand management activities, it is critical to recognize their involvement and responsibility.

If I can use a specific example, we were talking the other day about the electric analysis program we had with Molson Breweries and some of the savings that resulted from that, I think on the order of some \$200,000.

Molson's happens to be a customer of Toronto Hydro. In that program, we provided an opportunity for Molson's to save some \$200,000. That is \$200,000 in lost revenue to Toronto Hydro. Part of that program was initiated through funds generated by Ontario Hydro and the Ministry of Energy. Toronto Hydro contributed to that funding. Looking at it from a narrow perspective, you would say we paid for part of the funding. Molson's saved quite a bit of money, but we wound up losing revenue on this. That is a short-term perspective.

What we are trying to do is have those kinds of programs right across the province so that utilities like Toronto Hydro and other utilities would ultimately benefit. I just use that example to demonstrate the importance of effective communication with the utilities, their involvement and their commitment. It is a partnership that was established with the formation of Hydro. We have had close working relationships in the past with the Municipal Electric Association and the local utilities.

There are some 316 different utilities throughout the province. They vary substantially in size, from the village of Holstein, which I think is the smallest one with about 100 customers, to Toronto Hydro which has well over 200,000 customers. In total, they serve some 2.5 million customers; 70 per cent of the business load of customers is distributed to the utilities.

The MEA serves as the association representing that utility industry, and it is composed of both commissioners who are elected and managers of the various utilities. Ontario Hydro works through these committees, staffed by the MEA, and also through the individual utility. We attempt in this ongoing liaison to keep contacts at various levels, including senior management within Ontario Hydro and the MEA. I am on the executive committee of the MEA. At the division level, we have three directors, including Mr. Palmer, who has been talking with you, participating in the marketing and customer service division.

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Past committees of this division include residential marketing, commercial and industrial marketing, advertising and promotion, customer service, the whole range. Hydro and the MEA together participate in some 24 different commit-

tees. The 37 Hydro staff involved on an ongoing basis periodically get together with over 50 different utility staff to try to develop standards and approaches which are acceptable to Ontario Hydro and the respective municipal utilities.

Some of the programs we have been involved in are listed here. I will not go through them all. They give you a sample of the kind of things in which we have had continuing involvement over the years. Certainly, in the time-of-use rate proposal we presented to the Ontario Energy Board, the municipal utility input was a critical part of that overall package we presented.

Other involvements we have are rate workshops, marketing, training courses and ad hoc committees to deal with specific issues, such as transformer station ownership. We had a committee involved a few years ago with the whole issue of rural rate assistance.

At the regional level, our regional people are in close day-to-day working relationships with the individual utilities. We do surveys on a regular basis and the level of satisfaction with the services provided by our regional people is quite high. There are a number of local initiatives that our regional people and the local utilities engage in. We have listed some of them right here.

I should perhaps identify the MEA district committee meetings specifically. The MEA is divided into nine districts throughout the province which have regular meetings, and our regional people are regularly inputting to those meetings.

The bottom line is that there are still some constraints. We cannot be all things to all people. Part of the idea behind the whole municipal utility structure is to provide a vehicle for local input for adaptation to local needs. Some utilities' perspectives are different to others on some of the initiatives we are proposing, but we feel with our past track record and the kind of co-operation we have and the ongoing liaison, we will continue to have the support of the majority of utilities. Like most marketing issues, if we have the involvement and commitment of the top 40 utilities, we would be dealing with utilities that handle 80 per cent of the load in the province. We need to simplify the process for their involvement and participation—we are working on that—and to maintain local support.

This is a summary of the MEA's support for our activities: "The Municipal Electric Association marketing and customer service division enthusiastically endorses the corporate initiatives recently announced by Ontario Hydro as they relate to the energy management branch, subject

to the Municipal Electric Association having a consultative role in the development and implementation of these initiatives."

We think that is an important part and so do they. They have specifically supported the kind of initiatives we have been talking about during the 1988 OEB hearing.

As I have indicated, we have three directors on a major committee of the MEA. The major accounts department within my branch has a particular focus to the municipal utilities. We have communicated our energy management strategic plan, which is basically what has been presented to the minister. We are planning to work on joint advertising on time-of-use rates because it is not good enough just to have a new rate form. We have to make sure that rate form is understood and that the customer application of those rates is considered in the overall process.

We are looking at a power quality committee, which we discussed earlier, because there are some particular needs for some customers: targeted programs in the area of heat pumps; an energy information video library is something we are looking at; continued regional co-operation, and assistance with the local utility energy management plans.

I have tried to move through that fairly quickly, but that essentially covers the topic of municipal utilities. I would be prepared to answer any questions of the committee.

Mr. Cureatz: If you were not expecting the question which I brought forward last week, I am sure that with the thousands of middle-management people that you have at Ontario Hydro, you have been able to come up with the answer, which should be down at the bottom of figure 11.3D-6; that is, boundaries, new initiatives.

Surely, in the past, you must have encountered the kinds of problems that I related, or should I refresh your memory of what they are? I mean, have you ever put your mind to trying to resolve those difficulties, or have you just carried on and shrugged your shoulders?

Mr. MacCarthy: As I understand it, your question was sort of the possibility of expanding the municipal utility boundaries. Basically, that is an initiative that can be taken by the local municipal utility appealing to that municipality. If there is agreement at the municipality level and a submission is made to the Ontario Municipal Board, the boundaries can be extended.

Mr. Cureatz: The difficulty is regional government, brought into being back in 1973. In my particular area, the town of Newcastle is quite

extensive in square miles. This particular large, developed suburban area is adjacent to the city of Oshawa. It would appear at the moment that the municipality deals with, is in contact with, the former Bowmanville hydro commission. Now it is called the town of Newcastle Hydro-Electric Commission, although it just covers the former town of Bowmanville, former village of Newcastle and Orono. For them to expand into the whole municipality, so they told us, would require a large increase in rates. Apparently, under the legislation, they cannot merely incorporate this particular large, developed area, which is paying rural rates at the moment, as opposed to residential rates.

You must have encountered those situations. I am suggesting instead of saying, "This is how you do it," some kind of initiative from Ontario Hydro to the Minister of Energy (Mr. Wong) saying, "We do from time to time run across these situations, and there should be amendment to the legislation" so that a commission can spot in an area such as I have encountered, instead of going the municipal route. The municipality does not want to do it because the hydro commission does not want to do it. It is saying the people in Bowmanville will be paying astronomical rates if we take in the whole municipality.

Mr. MacCarthy: You are saying that we should impose that on them.

Mr. Cureatz: No. I am saying that I know you are bound by legislation in not being able to do that, but it seems to me a reasonable possibility for a commission. The commission said it would take in just the suburban area, but it does not want to take in the whole municipality. It wants it both ways too.

Mr. MacCarthy: Let me identify the problem. I am not sure I have a solution. It is quite attractive for a municipal utility to absorb a high-density area. That is great for the municipal utility, but in fact what that does is decrease the average population in the rural district and, in fact, increase the rates to the rural community. If you extend that and you only take the plums into the municipal utility, what you are going to do is in fact increase the rates to the rural retail customers.

Mr. Cureatz: I know, but the argument there of course is, for those people living in the rural areas, be it estate, residential or farm, that is the burden that all people in Ontario take upon themselves in regard to rural rates.

I will tell you, it is extremely difficult facing an interested crowd of 400 people, explaining that they are in a high-density residential area and

are paying rural rates. Just on the physical aspect of looking at it, it is crazy. Have you never encountered situations like this before?

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Mr. MacCarthy: We encounter that situation on a regular basis.

Mr. Cureatz: Great. What do you say to resolve it? Do you throw up your hands and say, "Sorry"?

Mr. MacCarthy: Perhaps you can suggest a solution.

Mr. Cureatz: Yes, I have: an amendment to the Power Corporation Act and the Municipal Act to allow commissions in those selected areas with the appropriate hearings to incorporate those portions of residential areas into the commission. Do you have a problem with that?

Mr. MacCarthy: Surely that kind of decision, it seems to me, rests with government rather than an imposition from Ontario Hydro?

Mr. Cureatz: I know, but politicians come and go. I am looking at Lorne over there; he has been here for a long time and probably will be here longer than my stand is here. If there was a little bit of initiative from Ontario Hydro saying—

Mr. Charlton: That's why he doesn't want to make a decision; he's going to be here.

Mr. Cureatz: I can remember me toeing the line about nuclear power, which I still do from time to time, and that is carrying the ball. Now you have switched a little bit to hydraulic, interestingly enough. I am just curious whether the possibility dawned on you to say to the Minister of Energy: "Yes, we have encountered these problems. Why do you not think about the possibility of amending the legislation? I am doing my bit from my end; I was hoping you might do yours from your end."

Mr. MacCarthy: I think the other side of that issue, as I understand it, and there is as much concern within the rural community with the argument, is to say, "Why should I in a rural community, using the same amount of power under the same conditions, pay substantially more than somebody who is living in the city?" It is not an easy—

Mr. Cureatz: Yes. That I appreciate, but I mean we are faced with that, but there are these now grey areas where we do have the kind of development that was formerly rural, now it is residential and they are still paying rural rates. No one wants to take any kind of method to resolve the problem. I think it can be and should be. How about giving it some consideration?

Mr. MacCarthy: I am prepared to give it some consideration, Mr. Cureatz.

Mr. Cureatz: You are as evasive as some of the Liberal cabinet ministers—as all the Liberal cabinet ministers, I should correct myself.

Mr. MacCarthy: I was not evasive at all and I do think I answered your question.

Mr. Cureatz: You will have it prepared in the fall—early fall.

Mrs. Sullivan: I wanted to explore the relationship between Hydro and the municipal utilities in relationship to the delivery of demand management programs. At one point, I noticed in the presentation there were the words "consultative role in development and implementation" and then latterly the word "delivery" was used. I am not quite certain if you will be looking to the municipal utilities to in fact deliver the programs or simply to be participants in the consultative process leading up to the introduction of programs and so on, and then Ontario Hydro would actually be responsible for the delivery.

If the municipal utilities were going to deliver the demand management programs, then would Hydro participate in the provision of technical assistance or training or funding that would be required in order to meet any increments in cost or in their lack of skilled personnel in these areas?

Mr. MacCarthy: That is exactly what we intend to do. I think on some of the initiatives, I would see the incentive-based initiatives, if you are talking about an equipment application and providing incentive would probably be centrally controlled, but if you get into a load management situation, which requires the local utility's involvement and commitment and the expenditures of moneys on equipment for that local municipal utility, then we would have to get involved with them, see what kind of benefits they would achieve and kind of benefits we would achieve and try to work out something that was mutually acceptable.

Mrs. Sullivan: Earlier, I believe when Bob Franklin was here, I mentioned that many companies in my constituency have taken advantage of Hydro's intervention in, I suppose, providing the electricity audits. They are very pleased with the results so far. Why is Ontario Hydro doing that rather than the municipal utility?

Mr. MacCarthy: Essentially, because we have the capability to do it. Some larger utilities are conducting similar types of audits where they have the resources and are of sufficient size to justify that kind of resource commitment, but

many of the utilities do not have that kind of resource commitment and draw on Hydro's expertise.

Mr. Chairman: Mr. South, do you have a supplementary on that?

Mr. South: Yes, to Mr. Cureatz's point.

Mr. Cureatz: We are going to have a solution.

Mr. South: You mentioned the municipality where you have a concentrated urban area in a large, kind of suburban municipality. What is the name of the large suburban municipality?

Mr. Cureatz: It is called Courtice. It is on the east side of the city of Oshawa.

Mr. South: Can the people of a concentrated part of a municipality form a municipal utility for part of the municipality? What would there be to stop them or control them? It may be to their advantage to form a municipal utility for part of the municipality. Is that possible?

Mr. Palmer: Under the Power Corporation Act, that is possible, and such utilities exist in Ontario, but regional municipalities may have some other kinds of problems that I am not aware of. If you had only the Power Corporation Act, it is possible for a subset of a municipal entity or township to form a municipal utility.

Mr. South: Other than the administrative costs of putting something together, the people in that area would enjoy an electrical rate likely 15 per cent less than they getting now. Would that be enough incentive for them to do it, Sam?

Mr. Cureatz: Actually, that is a good point. We discussed that with representatives of Hydro, and the rates would actually go up because it would be in proportion to other commissions, actually small, for them to get that organized. Then you have the whole problem of its being a new area and the growing pains of new people and people taking the initiative on their own. Everything points to allowing them to have the opportunity of going under the umbrella of another, existing commission. We have explored that. That may be the eventual way we will try to direct it to go.

Mr. South: I have always felt that it is one of the problems. Two groups are well represented. The municipal utilities are well represented through the Municipal Electrical Association. The large electrical users are well represented through their own group. What do you call the other group?

Mr. MacCarthy: Rural retail system.

Mr. South: Rural retail system is represented by Ontario Hydro. I suggest that there is kind of a prejudiced or biased view of their protector. It may be a real advantage for that third group to have some kind of an association separate from Ontario Hydro to look after its peculiar interests.

Mr. MacCarthy: I agree with that. In fact, we tried to encourage that because of that very issue and were unsuccessful.

Mr. Chairman: If I may interject, we seem to have shifted off DSPS a little bit here. Mr. Dietsch, did you have any questions relating to Mr. MacCarthy's presentation?

Mr. Dietsch: I was curious to know, in terms of when you are working closely with these local utilities, whether in fact there is any discussion that takes place with regard to the age of the service that local utilities might have in more historical parts of Ontario and what type of services Hydro transposes over to those utilities, whether to help them in terms of upgrading their utilities or just what types of services they provide.

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Mr. Palmer: If you are asking whether Ontario Hydro makes a contribution in a financial way to the upgrade of municipal facilities, the answer is no. Each municipal utility is expected to look after, pay for and include in its rates the cost of all local services. If you are asking, on the other hand, whether we provide some advice, particularly for the small utilities in such areas, the answer is yes, we provide advice on request.

Mr. Charlton: I do not have any questions on this section, so if everybody else is finished, I just wanted to respond to the comment Mr. McConnell made at the end of the last section. He is correct that there was at least one member—and if I recall correctly, several members—of the select committee two years ago who did dump on Hydro for some of its demand-increasing initiatives.

It is interesting to note that you have come back here this year and clearly told us that those initiatives which we dumped on you about were in fact inappropriate. So those of us who are responsible critics of Hydro will only ever criticize you for those things which do not make sense in the context of Ontario. We will certainly not dump on you for demand-increasing options that make sense both for Ontario industry and/or for Ontario as a whole.

Mr. McConnell: We accept your observations without reservation.

Mr. Chairman: Could we then move on to the next subject which is timing of demand management?

Mrs. Grier: Mr. Chairman, I had a question briefly, if I might?

Mr. Chairman: I am sorry.

Mrs. Grier: In the last committee the issue was raised about the contribution of municipal utilities to demand management. I wondered if you had established, through all of this liaison with them, any kind of targets or what kind of contribution you in fact saw them making. Is it all going to be voluntary or is there any kind of negotiation you can have with them that they would implement to a certain degree?

Mr. MacCarthy: We have not identified specific targets for individual utilities. We have talked about our general demand-management plans, and then in our regional categories, we have identified what we thought were reasonable targets for that region, which includes the municipal utilities. The plan then is to go forth from the regional level, discuss that with the specific municipal utilities and try to get agreement at that level.

Mrs. Grier: So as you begin to develop more data to facilitate the end-use forecasting and some of the things we talked about the other day, do you then see yourselves breaking that down per municipal utility as to the kind of contribution you could expect from each municipal utility towards demand management and energy conservation?

Mr. MacCarthy: I can see that in some areas. If we are talking about load management, certainly that would be one area. Some others like appliance efficiency, for example, I do not think we would break that down.

Mrs. Grier: Is your greater acceptance of demand management now as opposed to two or three years ago reflected also in the municipal utilities?

Mr. MacCarthy: I would say that is generally so.

Mr. McConnell: Mr. Carrothers, you have plans, I believe, for some presentations from the municipal utilities.

Mr. Chairman: That is right.

Mr. McConnell: You can ask them those questions directly.

Mr. Charlton: I guess we wanted to know from you if they were being good or bad.

Mrs. Grier: They want everyone to be born again, not just you.

Mr. McConnell: We did hear. We were listening. There were concerns expressed by the select committee about how much the municipalities were on board. Dane MacCarthy on my right and Hedley Palmer put forward a very major effort to make sure that the demand/supply planning strategy has been reviewed with every single municipality in the province since we issued the document. In response to that question, we can say we think the municipalities are on board. There might be exceptional individuals who maybe are not fully on board, but I hope they would reflect that opinion when they come in here to talk to you.

Mr. Chairman: Mr. Palmer, if you could come forward, we could begin the next section.

Mr. Palmer: I would like to tell you in advance that this section is blessedly short. It is entitled, "Timing of demand management." It deals with strategy element 3.5.1: "Development and implementation of economic demand reduction programs should be started early enough to be effective in contributing to the most cost-effective demand/supply balance," and strategy element 3.5.2: "Priority should be given to influencing the new market rather than the retrofit."

Demand options, like supply options, take time to plan and put in place. Given the time available and the challenging targets we have set for ourselves, it is necessary that we move ahead pretty quickly.

I would like to give you an example. There are approximately 400,000 electrically heated homes in the province and some retrofitting of the thermal envelope of those houses would reduce demand by perhaps a kilowatt and a corresponding amount of energy. A program of 40,000 homes a year over 10 years is a massive program, so it takes quite a long while to go through roughly 400,000 houses.

It takes people and industry a while to adjust to time-of-use rates, to make decisions about plant equipment and all that kind of thing. You need to get rolling with it so that the bite of time-of-use rates begins to take effect within a reasonable time.

There is a need for information on how best to deliver these programs. Demonstration projects, field trials and all the other things help in the dissemination of that information.

The economy is growing and investment decisions are made, so you need to be on top of the new market in order to get the benefit from it for years to come. We are currently proceeding with early implementation programs, field re-

search and time-of-use rates to recognize that eventuality.

I might mention a somewhat disconcerting factor. One of the drawbacks to moving ahead in commercial buildings right now with high-efficiency commercial lighting—I am not talking about the fixtures themselves, but the tubes and so on in fluorescent lighting—is that they will come up for renewal perhaps before they are really effective on the system. You may be starting this kind of program too early so that you do not get any real benefit from it in the way of capacity saving. You may get some energy saving on the system, but not in the development of plans. That is a little peculiarity I just mention in passing.

We do believe in giving priority to the new market. It is cheaper to build these energy-efficiency measures into new buildings more so than into existing buildings. New buildings and equipment have a longer service life over which the benefits of energy efficiency can be realized, and therefore the demand/supply strategy places priority in the new market. But we are not neglecting the retrofit market either.

It is not in my notes, but it is my general impression, in the building of new commercial buildings, that where the market is basically within 10 miles or so of city hall here in Toronto—and again, in the city of Ottawa, there is another major commercial building development—new buildings are striking a very high standard of electrical efficiency and energy efficiency and perhaps are coming close to what might be called the state of the art in energy efficiency at the present time.

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There is in Toronto a downtown energy forum composed of all the people who represent the building industry and it is sponsored basically by the Ministry of Energy, which is the catalyst behind it. They hold a forum each year where speakers from the industry talk about buildings and improvements and they seem quite positive that in the past 10 years, some 30 per cent improvement has been made in energy use in commercial structures in Toronto. That is across the board; all kinds of energy use. Of course, electricity is included in that number, so we are reasonably confident that new commercial buildings being erected today are pretty far along the way of being highly efficient buildings.

Mrs. Grier: When you talk about building a new energy-efficient building, are you talking about avoiding the need for energy by designing it in such a way that you can make as much use of

passive solar energy as possible, or are you just talking about better use of energy?

Mr. Palmer: In commercial buildings, if you were to look at some of those major structures downtown, you will find they are all well insulated. You will see the insulation going up on them. If you look back 10 or 15 years, you find those buildings were putting windows into steel frames with no insulation in the walls at all.

You will find that the windows in these buildings are of double or triple glass or use this magic-mirror idea that lets the sunlight through but does not let the ultraviolet rays in. All those features are being built into those buildings.

Mr. McGuigan: There are a whole lot of matters that may require legislation. For example, in an apartment building where the individual person pays rent but heating and cooling are supplied, there is no incentive for the apartment owner to put in drapes, replace windows that open and close, and do the proper things there.

Have you given any thought to what should be done in those types of areas to encourage the conservation of energy?

Mr. Palmer: This corporation for which I have worked for 40 years has spent a lot of money on that question and a lot of research over 15 years. You are caught between two issues. We know for certain that individual metering of apartment units would reduce electricity by perhaps 10 per cent when people have to pay their own bills.

On the other hand, when electric heating is used to heat apartment buildings—and that is a very common form of heating for large apartment buildings—apartment units heat very erratically. Some of them need a lot of heat; some of them need very little heat. The ventilation systems in the buildings tend to draw hot, fetid air from the corridors into some apartments and exhaust it through the windows. In other units, they draw cold air through the windows and exhaust it into the hall. It is a very erratic situation.

In those buildings where there are individual meters, you will find tenants in a foment all the time because in some suites the tenants are paying \$25 a month for heating and in other suites they are paying \$150 for heating. It is a very difficult customer relations problem to deal with. You have this business: energy is to be saved, undoubtedly; on the other hand, you have a very bad customer satisfaction problem. That is the issue.

Mr. McGuigan: It is really due to faults in construction.

Mr. Palmer: There is only so much money to be spent on an apartment building. You could put in a very sophisticated ventilation system that would possibly correct some of those problems and that would help, but suites high up in the building take more to heat than those that are lower down; suites on the north side of the building cost more to heat than those on the south side, and you have all those factors to deal with. It is a very unpleasant customer satisfaction problem.

Mr. Chairman: We can move on to the next section, which is entitled, "Demand Management Research and Development." Perhaps, Mr. McConnell, we can hear from both Mr. Palmer and Mr. Mills and then pause for questions after, as that appears to be a package of information that goes together fairly nicely. Mr. Palmer, I guess you do not get a chance to sit down.

Mr. Palmer: I am going to go again, am I?

Mr. Chairman: Yes, please.

Mr. Palmer: This part of the presentation is going to deal with research and development in demand management.

The strategy element 3.6.1: "Technical research and market development to support existing and planned demand management programs will be given high priority so that demand options can be efficiently implemented in a timely manner."

The strategy element 3.6.2: "To provide flexibility, technical research and market demonstration programs shall be undertaken to provide information on potentials for new demand management programs."

Most electrical efficiency programs require the replacement of old technologies with new, more efficient ones. The same is true for many load shifting applications.

Most products of this kind are new in the marketplace and often there are unanswered questions about them. Will they be reliable and will they last a long time? Will they be free from undesirable side-effects? For instance, we have discovered that some commercial high-efficiency ballasts for fluorescent lights radiate harmonics that upset computers. Since we are becoming very computerized in most office buildings, that is an undesirable side-effect. You would not want to go out and re-equip a brand new building with a whole lot of those things and then find your computers would not work. You would need to know that before you started. I am not saying they are all infected with that problem, but we have discovered some that have that kind of problem.

Good products, for some reason or another, do not become known to customers. That is another issue.

Even a program such as the introduction of residential time-of-use rates will require a different kind of meter and there is none approved in Canada for that purpose yet. By the way, that is not a particular issue. It just requires us to identify meters that will work and ask the company to pass them through the federal people to get approval. All metering in Canada is under federal government jurisdiction; it gives approval for all metering equipment.

Reliability and lifespan: I will state the issue with brutal frankness and by example.

Energy efficiency and load shifting objectives can only be met if new equipment which we promote is reliable, lasts a long time, and in most ways provides ongoing satisfaction for the user.

A generation station lasts 40 years; a commercial lighting system lasts 15 years.

That means if you are using an improved lighting system to reduce the need for the generating station, you must have confidence that customers will replace it twice in the 40-year space with equipment of the same level of efficiency or better. Moreover, if the utility pays out in incentives the equivalent of that generation station the first time, it has no money to offer the customer the second time around.

The customer must be sufficiently satisfied with the first installation to do it again on his own.

This issue of there being different lifespans of demand management as compared to supply is a serious issue and you deal with it by making sure that customers are satisfied with the first installation and get a lot of benefit from it so they are induced to continue to want to do the thing the second time around.

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We have been looking at more than 30 kinds of electrical products and considering them for inclusion in our programs. Many of them are fairly new in the marketplace. The risk of promoting unsound equipment is contained by information gathering from all the Ontario suppliers, indeed all the suppliers of the products. We do analyses on them, testing and demonstration to explore characteristics under realistic and rigorous conditions.

It is late in the afternoon, but on this subject let me stop for a moment, because I was talking with Mr. McGuigan before doing the brief and was telling him that we were so enthusiastic about a plastic water heater that has come on the market

in the United States. If we are going to load-control for water heaters, we need a bigger heater than is currently used. It is terribly hard for contractors to get it in the basement and get it connected because it weighs twice as much and is a lot bigger.

These plastic water heaters were nice and light and it looked like they were an answer, so we bought a bunch of them and installed them in an apartment building in southern Ontario. They worked just great. One day, a water main broke and the water ran out of all these tanks. The heating elements came on, sensing there was not any hot water, and pretty soon they melted the tanks. Then the water returned. By this time, the tanks did not hold water very well and we had a \$30,000 mess to clean up in that apartment building, and we cleaned it up.

We did not feel so bad about 30 water heaters or something, but you can imagine the difficulty with 100,000 of them out there. We found out that if you are going to use this kind of water heater, you had better have some kind of low-water control that will not let the electricity come on. That is one of the values of test marketing.

By the way, we went after the manufacturer about this in the United States. They have been selling them for two years. We said: "How are you getting away with that kind of thing? Surely water fails once in a while south of the border." We did not get any real answers, except they gave us a whole bunch of new heaters with a low-water control in them.

With regard to product acceptability, there are many ways for a product to become unsatisfactory in the eyes of the customer. Some of the less obvious ones relate to the specialty products with very scarce trade support in the form of repairs, spare parts and service.

Our experiences during testing and demonstration are important indicators of the areas of concern, as I have just told you, and we need to look after them before we get them into programs. We have to ensure that trade allies are ready to work to ensure availability, maintenance and after-sales service in step with the program thrust.

While unsound products with doubtful market acceptance might be dropped quickly, there are other products where the potential contribution is so valuable that we consider research and development money as well spent to fix weaknesses. I am sure Don Mills is going to talk about this kind of thing a little bit in his presentation.

We have worked with various manufacturers for several years on improvement in heat pump control systems. We have negotiated with manufacturers to install beneficial changes in their products to make them work better, and most of our initiatives for product improvement have been received enthusiastically by the manufacturers because in the end it probably provides a better product for them to put on the market.

Process efficiency improvement opportunities in industries and new ways of using electricity in houses and commercial building will be included in our screening, research and development. You have heard Dr. Vicki Sharpe this afternoon describe some of those uses in industry, and this afternoon from Don Mills, the director of our research division, you will hear further examples of work done in research on electrotechnologies, ways the division has worked with customers to test and demonstrate electrical contributions to better productivity and overall industrial efficiency.

In all cases, we see consideration of customer benefits driving these initiatives for energy efficiency, load shifting and process improvement.

With that, I am finished, Mr. Chairman. Do you propose to take questions or wait until Dr. Mills has completed?

Mr. Chairman: I think we should hear from Dr. Mills and then take questions on the subject as a whole. Perhaps Dr. Mills could come forward.

Mr. McConnell: Dr. Mills is the director of the Ontario Hydro research division and he is a new member of our panel this afternoon.

Dr. Mills: If you think having a name like Don Mills is funny, living in Toronto, you should try cashing a cheque some time.

This afternoon I want to talk about an area of utility research that is almost as old as Hydro itself, demand-side research, that is, how electricity is used by our customers. In the early 1900s, Sir Adam Beck demonstrated how electricity could improve the lives and prosperity of the people of Ontario. Today, through demand-side research, we continue to investigate opportunities for efficiency and conservation through lab tests and field trials in actual houses and factories that improve the lives of Ontarians and prosperity of Ontario. Our research results provide input to system planning and to energy management for larger-scale demonstrations and programs.

Demand management research targeted at the residential and commercial sectors focuses on improving end-use efficiency and reducing electricity demand. Heat recovery, better buildings, improved electric heating systems and electric peak shifting are some of the areas that we have recently investigated.

Demand-side research can have important implications for the province's industrial sector by providing options for improving the productivity and the competitive position of our manufacturers. Over the past two and a half years, well over 100 Ontario companies have been helped to determine the benefits of using dehumidification, microwaves, infrared and various other electrotechnologies in their production facilities.

I will demonstrate the impact of this research on the residential, commercial and industrial sectors by reviewing the results of some recent projects. The first one is efficient energy use in commercial establishments. This first group of projects deals with the residential and commercial sectors and provides some very good demand management options for improving efficiency and reducing demands on the electric supply system.

This first project is a field project that was undertaken by the research division to demonstrate the capabilities of heat recovery technology in commercial establishments. The demonstration took place at the Feather's restaurant in Toronto and has potential for applications in a wide range of commercial operations for energy management, process applications and indoor climate control.

An innovative heat pump water heater/heat recovery system was designed and installed in the kitchen area of a restaurant to produce hot water for dishwashing with the heat removed from the overheated kitchen by air-conditioning. The design of the system is unique in that it takes advantage of the coincident waste heat production, hot water demand and space cooling needs.

The system allowed the restaurant owner to achieve energy savings of over 28,000 kilowatt-hours per year, for a 42 per cent saving, and a power demand reduction of 7.6 kilowatts, for a 44 per cent reduction. In addition, the system provides an improved and more comfortable working environment in the kitchen and the adjacent areas. The simple payback for this scheme is 3.5 years.

You may be interested to know that this particular project won an American Society of Heating, Refrigeration and Air-Conditioning

Engineers' award in the category of alternative energy uses. There is a very significant potential in Ontario for applications of this technology in a variety of commercial establishments, such as laundries, hotels, motels, gymnasiums, fitness centres and other types of establishment.

Electrical-resisting heated homes have a significant impact on the demand for electricity around the time of our winter peak. In order to investigate the potential for saving energy and reducing peak power requirements in houses, 16 dwellings spread throughout the province were thermally upgraded and carefully monitored before and after changes were made.

The two major upgrades made to the houses were adding basement insulation and air-sealing the structure. Few people realize it, but heat loss from the narrow strip of basement wall above the ground can amount to some 25 per cent of the total heat loss of the home. By adding insulation to the basement walls, this can be reduced significantly.

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Air leakage is another important factor in the heating characteristic of a house: 20 per cent to 40 per cent of a heating bill can be attributed to air leakage. However, in this case there is a balance between heat loss and indoor air quality. We have found that normal air-sealing improvements lower heat loss without significantly affecting air quality.

Results from that experiment showed fairly significant variations depending on individuals in the home, the specific house construction and occupant lifestyles. However, the average saving of power demand at the time of the system peak was 0.7 kilowatts per house, which is about a 10 per cent reduction. Based on the technical potential to do upgrades as seen in this study and accounting for differences between this sample and the population of 370,000 all-electric, single-family Ontario homes, an eight per cent penetration rate would result in a system peak demand reduction of some 20 megawatts.

Much larger studies are now being undertaken in conjunction with the energy management branch to better define this potential and to add more extensive and innovative retrofit measures which may yield bigger demand savings.

Now I would like to talk about more efficient heating systems, in the first particular one, the northern climate heat pump. More efficient heating systems designed for the cold Ontario winter can directly reduce our customers' heating costs. In addition, heating systems with low peak demand or peak shifting capability make more

efficient use of the electrical supply system. I would like to describe a few heating systems which we feel offer great potential for Ontario. In particular, all these systems are cheaper to operate than gas heating systems and provide air conditioning as well.

The research division, working in co-operation with the Canadian Electrical Association, developed an advanced design for a residential air-source heat pump that continues to work well even at the coldest winter temperatures.

Unlike most other designs on the market, which drop in performance to being mere resistance heaters when temperatures reach minus 25 degrees Celsius, the Hydro design is still producing 50 per cent more heating output than its electric input at a temperature of minus 26 degrees Celsius. You might recall that Ontario Hydro's winter peak invariably occurs at outdoor temperatures somewhat above that.

When the performance of two test units in the central and Georgian Bay regions was examined, we measured demand savings of about 1.7 kilowatts at the time of our system peak. The heating demand would otherwise have had to come from the power system. The field trial results indicate that the Ontario climate heat pump has a cold weather output and efficiency that is superior to the traditional air-source heat pumps.

From a winter-peaking utility's perspective, ordinary air-source heat pump systems have little to offer because they save very little at the time of the system peak. However, the cold climate pump could easily cut 25 per cent off the peak heating load of a residence equipped with the device. This technology is now ready to transfer to the industrial sector, and we have had discussions with some of the manufacturers to see if they will adopt this design.

Now I would like to address our rather unique heat pump which is a burner-assisted bivalent heat pump. In 1980, the research division had engineers visit a newly formed manufacturing company in Niagara Falls, Ontario, and we examined the invention that bore that company's name, the Kool-Fire heat pump. They realized the importance to electric utilities of a heat pump that could switch off electricity to another fuel during winter cold spells. The research division became the first laboratory to fully measure the performance of this unique, patented Canadian product.

By applying the principles of good heat pump design, we were able to advise the manufacturer

on changes that would make his unit more efficient as a heat pump and less hungry for gas as a backup fuel.

After modifications were made, we monitored this burner-assisted heat pump at a Mississauga home and found that the peak heating demand could be cut by three to four kilowatts from the electric load that an electric furnace would have had in the same house.

The burner-assisted heat pump has a low electric demand at the time of the electric system peak, because it actually changes from being a heat pump into a condensing gas furnace during cold weather. The furnace part is outside the house, so propane can be burned without worrying about bringing heavier-than-air gaseous fuels into the house.

Fuel consumption is so low over winter that a modestly sized tank of propane will last the whole winter. By a modest tank, I mean something like five times the size of tank you would find on your barbecue on your back deck. Five tanks of propane will see you through the winter with this device.

Electric savings at peak times could have significant demand management implications in a province the size of Ontario. If just 20 per cent of Ontario's existing 370,000 electrically heated houses were equipped with burner-assisted heat pumps, this would save almost 260 megawatts at the time of the system peak. If 20 per cent of the expected 150,000 new electrically heated houses to be built between now and the turn of the century were similarly equipped, this could save another 105 megawatts, for a total of over 360 megawatts of demand management savings. Recognizing the potential, some US utilities are already actively promoting this Canadian product.

The recent softening of heat pump sales in Ontario has affected the manufacturer negatively, but steady exports to the United States and buoyant sales of his commercial rooftop versions increase the chances that this small company will be able to introduce new products that address Ontario markets. One thought is that a heating-only product might have special demand management significance for northern parts of Ontario that now have a relatively high penetration of electric resistance heating.

I would now like to address the topic of ground-source heat pumps. Ground-source heat pumps in cold latitudes were pioneered by the research division back in the late 1940s, but relatively low energy prices held back development until recently. Curiously enough, the

resurgence of ground-source heat pumps has come from Sweden, a northern country where the pressures of energy conservation preceded our own by about a decade. Today, Ontario installations of ground-source heat pumps have grown from under 500 three years ago to over 5,000 now, with a broad spectrum of applications in residential, commercial and industrial markets.

In the last few years, the research division has been testing these new products, both in laboratory facilities and in field applications where the complex interaction of machine, environment and customer are observed. We have shown that good ground-source heat pump systems can reduce the electrical load by half at the time of our system peak and can save up to two thirds of the annual heating energy needed in a house or building. Such impressive performance is unmatched by any other all-electric system on the market today. As time goes on, we expect such systems to have a dramatic impact on the electric economy of the future.

Because the ground-source heat pump is still relatively expensive to install residentially, only moderate market penetrations are assumed in this table. However, if only two per cent of the existing all-electric houses and five per cent of the expected new all-electric houses chose ground-source heat pumps between now and the year 2000, a total of 75 megawatts could be cut from our system peak.

Of course, larger market penetrations would yield correspondingly higher savings. In the commercial space-conditioning market, particularly low-rise offices or schools, ground source is just coming into its own, because the energy cost is so low and because the first costs of alternative commercial heating/cooling systems are nearly the same as the ground-source option.

As a result, much research effort is now going into providing the ground-source industry with help and advice in setting up the techniques and standards needed to ensure reliable installation under the conditions encountered here in Ontario. The Canadian Standards Association standards are under development and are expected to reflect our contributions to this important new electric technology.

I would now like to address some of the industrial applications. In particular, I will give three examples. The industrial R and D we do really demonstrates the methods of making the best use of electrical energy in the industrial sector. To this end, the research division works with both the regional and the head-office energy management personnel to provide the customer

with a complete evaluation package, incorporating both the technical and the financial aspects of the application.

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This next group of projects provides three examples of demand-side research that has helped Ontario industry become and remain competitive. The first industrial application involves electric dehumidification for lumber drying. Electric dehumidification can reduce the energy consumed for lumber drying while producing a better quality of wood. The technology also has applications in the food and the textile industries.

The research division provided consulting and monitoring assistance to the Andrew Malcolm Furniture Co. to show that the electrical dehumidification reduces energy consumption by some 60 per cent. The kiln operator also reports an improvement in wood quality since the electric drying system was installed. He gets fewer cracks and splits in his furniture wood.

In addition to these benefits, on advice from Hydro, the company has implemented new controls in the drying kilns to reduce peak electric demand by about 100 kilowatts and save a further 24 per cent of the operation of the drying system.

Another objective of demand-side research is to assist Ontario industry improve its productivity through the use of electrotechnologies. Recently, a manufacturer of plastic containers felt that productivity could be increased by using infrared heating. However, they were uncertain about how to test this idea and how much could be achieved by adding infrared heating to their process. After visiting the customer's factory and discussing the possibilities, onsite testing was performed to determine the potential for infrared heating.

The tests demonstrated that infrared heating allowed the line speed to be increased by 45 per cent. This results in an overall increase in plant production of some 25 per cent. Note that these differences in percentage are due to the downtime of the forming machines to change moulds.

An additional benefit of infrared heating is the increased clarity of the product. The cost of adding an infrared preheater to the six processing lines is less than \$10,000 in total, which is simply much cheaper than buying many more forming machines. This project is a good example of how slight adaptations to existing processes requiring only a modest capital investment can produce significant advantages for a manufacturer. This type of service or assessment is generally not

available from equipment suppliers or from a consultant.

There is considerable potential in Ontario industry for applying existing or similar technology applications. There is also considerable potential for significant productivity gains by applying various electrotechnologies in new applications.

One example of a unique application for an electrotechnology is the use of microwaves for drying ceramic products. This application was developed by Ontario Hydro research and demonstrated for a production line at MBM Ceramics, located in Etobicoke. This technological innovation had a major impact on this small Ontario company.

The incorporation of microwave drying into the ceramic production at MBM alleviated their largest process bottleneck, drying the ceramic greenware. This also allowed them to automate their production. This process is the first of its kind in the world and has allowed MBM to increase its productivity by a factor of four. The increase in productivity has led to reduced production costs and increased sales. With a staff increase, production is now up by a factor of 16.

The bottom line is that by switching to microwave processing, MBM was able to win market share from Japanese and Italian competitors and is very optimistic about its entry into the US market.

The results of these projects I have just described show that a large effect can be made on the efficient use of electricity through demand management research with only a modest investment in resources. Many new opportunities for further demand management research, especially related to the efficient and innovative use of electricity by our industrial sector, are possible. Much of this work will involve further development of applications for the technologies I have already described to you, namely, heat pumps, infrared and microwave systems.

However there are significant opportunities in three additional areas which I indicate on this transparency. With advanced electromagnetic applications, the research division has developed expertise with innovative electromagnetic techniques as a result of research and development for the supply side of the utility operation. Much of this may benefit manufacturers involved with forming and heat-treating metals.

The division has had a long history of experimenting with lasers. Expertise is used to help industry identify good applications related

to automated production and advanced material synthesis.

With plasma, research maintains and operates electric arc and induction plasma test facilities. These systems are capable of producing very high temperatures which can be used to synthesize and modify materials. It can be a powerful technique to produce low-cost materials into valuable industrial feedstocks.

In summary, these are examples of how Ontario Hydro research is improving the lives and prosperity of the people of Ontario. For 1989, our business plan on electrical utilization represents something like seven per cent of the research division's gross budget, which will amount to something like \$4.2 million that will be used to continue to improve electrical efficiency in Ontario's residential, commercial and industrial sectors.

It is my understanding that you will be visiting the research laboratory on Friday. At that time, I will be more than happy to show you some of the facilities and the work we have done.

In closing, I would like to address the question Mr. Ray raised as to whether we were addressing the initiatives and the thrust that was announced in the Premier's Council booklet on technology for Ontario. There is a very long look at the future for Ontario in that document. I am sure the work we are doing at our research division is in good step with that document. In fact, there is a copy of it on all the managers' desks in the research division because there are significant chapters in there devoted to electrotechnologies and the benefits of research and development.

Mr. South: I have two questions. Page 30 refers to dehumidification drying, which you say saves 60 per cent of energy used for drying. Are you comparing that to other methods of drying such as using gas?

Dr. Mills: Yes. The original system was to use a gas-fired burner. You then used fans to blow over the wood. That produced uneven drying, scorched some of the outside timber and left some in the centre not totally dry.

Mr. South: The other question is in regard to ground-source heat pumps. Is there a size of lot for a residential house you are limited to in using a ground-source heat pump? Are you using the heat of the ground itself or the ground water moving through that lot?

Dr. Mills: You are using the heat of the ground itself. Ground-source heat pumps are usually in two forms, a vertical form in which vertical holes are drilled on, say, the back lot—say six holes, 200 feet deep—in which

ethylene glycol is circulated as the pickup medium. There are some installations on rural lots where one can install piping that runs horizontally. At the moment, we are doing an experiment in conjunction with a Swedish manufacturer in which we are using a single expansion loop in a hole drilled in the front driveway of the home. One of the main criticisms of ground-source heat pumps is that they have the label "carriage trade."

Mr. South: They have what?

Dr. Mills: The label "carriage trade." In other words, they are a somewhat expensive installation because of the need to drill the many holes. However, if one could install a ground-source heat pump with a single hole drilled in the driveway of the home, then you would have something that would be an excellent retrofit for any home anywhere in any major urban area or city area. This involves one hole where the expansion loop for the Freon just takes place in one loop, but that is still experimental.

Mr. South: Would this be a six-inch-diameter hole?

Dr. Mills: Yes.

Mr. South: And you have a loop?

Dr. Mills: Just one loop in the middle of your driveway.

Mr. South: What kind of temperature do you get to using the ground? Do you get up to about 45 degrees Fahrenheit? Is that the realistic top?

Dr. Mills: Some temperatures measured in the outflow from ethylene glycol run as high as 52 degrees Fahrenheit.

Mr. South: Fifty-two?

Dr. Mills: Yes. The actual temperature difference you pick up in going through the ground is actually quite small. It is only two or three degrees difference. That is all you need because of the large volume flows.

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Mr. South: I live on the St. Lawrence River. What are the possibilities there of going to water at depth. We are ice-covered during the winter-time, but I do not know how warm water at depth is. Would it get up to 40 degrees Fahrenheit?

Dr. Mills: There are heat pump systems that have been designed to operate in large wells. If you have direct access to river flow, there are heat pumps designed where you can actually run the piping out into the river flow. It would work quite well.

There was a seminar organized some three years ago between energy management branch of

Ontario Hydro and the Ministry of Energy that examined all aspects of heat pump performance and installation. Is that right, Mr. MacCarthy? About three years ago?

Mr. MacCarthy: Yes, that is right.

Dr. Mills: That document is available.

Mr. Charlton: I have a comment and a couple of questions. The comment is simply that it is obvious Hydro's research department has latched on to technologies that the rest of Hydro has not latched on to yet. That was evident in the quality of the presentation of the overheads here this afternoon. There is a lot Hydro can learn from its research department.

Mr. MacCarthy: That is quite true.

Mr. Charlton: We will go back to Mr. Palmer's last presentation, if we could. Mr. Palmer raised a couple of what I thought were very important issues in the approach to demand management, where he was talking about the difference between a demand management program, effort, initiative—I think he used the example of commercial lighting, where the commercial lighting only lasts for 15 years but the supply plant lasts for 40 years.

I think basically that speaks to the issue we got into a bit two years ago in the hearings. Essentially, a number of proponents of demand management initiatives took the position that we have to start dealing with demand management, conservation and any number of other demand management techniques in the same way we deal with the supply options. In other words, demand management programs cannot be one-shot; they have to be ongoing. If they are going to replace a plant, they have to be ongoing, past just an initial installation or whatever the nature of the program happens to be.

For example, Mr. Palmer raised the concern that if you do a massive program across the province of replacing commercial lighting as a demand management program to replace the need for supply, and that program in effect has only a 15-year or 20-year lifespan, there has to be something at the end of the 15 or 20 years to deal with that. I do not think any of us disagree there is going to have to be a fairly high level of customer satisfaction during that first life of that efficiency.

If Hydro has in fact taken on demand management in the same way as the supply option and is staying on top of technological change and efficiency improvement over the course of the 15-year or 20-year lifespan of the original demand management initiative, then it

seems to me demand management can be handled in very much the same way as the supply option, and in some instances at least, in a better fashion than the supply option. At the end of the 15 years, assuming you have delivered the customer satisfaction you talked about, there is likely to be an additional efficiency improvement to be gained as a result of technological change that has gone on in that 15-year period.

Maybe you can just throw some comments on to the record in terms of expanding a bit on how you are approaching that whole question of demand initiatives.

Mr. Palmer: I suppose the first point is that when you think about providing an incentive for a lighting system, you have to think about that incentive in terms of the fact that this particular measure may have to be repeated a number of times to represent the same kind of contribution to the system as, say, building a plant does. That means you cannot fire all your shots in the first round. You have to anticipate that you are going to have to put out some money again 15 years hence, perhaps a couple of times. You think about it in terms of an equivalent life cycle, if you like, to the average life of a little coal plant or hydraulic development or whatever. At least that is one issue you have to—

Mr. Charlton: I think that is a fair comment. Take that comment in conjunction, though, with the likelihood that there is a second round of efficiency improvement at the second stage. That somewhat modifies the impact of what you are saying about having to spend two or perhaps three times in terms of incentives over the period during which you would have been supplied by a supply option. If there are additional efficiency improvements along the way, they may pay for themselves in the same way as the first round.

Mr. Palmer: I accept the point. You have to think, "Maybe we could risk a little more on the first one in anticipation that the technology will be better the second and third times."

Mr. MacCarthy: I would think we would have a mix in that. On some, we might calculate a partial incentive. If we said three periods of time would be roughly equivalent to a supply option, we would have incentives spread out. I think on others, we could afford to go the whole shot the first time on the premise you have identified. I think we will be having a mix. The basic principle is, what do we have to do to get the application in place? If a lower incentive would do it, you would go with the lower incentive. If it needs a higher one, we would start looking at that option.

Mr. Palmer: If you insulated the building, you could expect it would last basically for the life of the building, so you would not be concerned about this issue, because the first time around will probably do it.

Mr. Charlton: I have just one other quick question. It relates back to something I raised two years ago and you mentioned it again in your presentation, Mr. Palmer. There are several things that go on. One is that there is not an easy availability of a lot of efficient technologies here in Ontario in the retail outlets. I think to some extent Hydro can play a role in that, as you have suggested, both in terms of approvals processes and in terms of awareness.

I suggested, for example, a couple of years ago, that one of the things happening out there is that there is not a lot of public knowledge about the availability of a range of efficient technologies. Perhaps through the production of an annual catalogue, if you like, of energy-efficient product lines you find acceptable—you mentioned, for example, some of the side issues that can sometimes be a detriment on some efficiency technologies in a certain circumstance. You mentioned the ballast one with the computer problem. It seems to me if you were to provide a cataloguing of that kind of thing that was widely distributed every year, Hydro could in large part fill the gap in terms of what is missing right now, at least around the question of public information.

Mr. Palmer: You might be interested to know that we have a full catalogue of commercial equipment on computer, a database on commercial equipment. It is quite extensive. We have joined forces with the northeastern utilities in the United States, a group called Nordax, to tie into its database of all its programs and its successes and otherwise, in order to share information and multiply our efforts in that respect. We had not thought about issuing a catalogue to the general public on it, but maybe that is something to think about.

Mr. MacCarthy: The other thing that was mentioned earlier by Mr. Palmer was the EnerMark store we were talking about. We see that as a vehicle to provide information on the latest energy-efficient—I think initially we were probably looking at appliances, but it could be expanded beyond that into other areas such as the ones Dr. Mills has identified. That is still in the process of development but we will be moving on that very quickly.

Mrs. Sullivan: Did I understand page 11.3G-20 correctly and am I estimating correctly that the number of research dollars in the demand management field is about \$300,000 per year, or am I wrong?

Dr. Mills: Our research division budget runs something close to \$4 million for 1988 and slightly more than that in 1989 if, after corporate review, that is approved.

Mrs. Sullivan: But the specific number of dollars that concentrates on demand management.

Dr. Mills: Yes. Most of that is on electrotechnologies, heat pumps, demand management, service to industrial customers, that whole spectrum of our—

Mrs. Sullivan: Seven per cent of the research division's gross annual operating budget is \$4.2 million.

Mr. McConnell: That is only a part of Ontario Hydro's expenditure. Mr. Palmer also has a different kind of development program that he was talking about.

Dr. Mills: That is strictly research money.

Mrs. Sullivan: So the seven per cent is \$4.2 million. It is not seven per cent of \$4.2 million.

Dr. Mills: No.

Mrs. Sullivan: Second, I wonder if we could explore a little bit further how Hydro is really relating in its research initiatives with the private sector. I was thinking in terms of joint ventures, in terms of contracted research, in terms of underwriting the cost of testing a product. One of the things that has certainly been identified by the private sector so far, and certainly was underlined in the Premier's Council report, was the difficulty of moving from the research level, through development, into market capability. I wonder how Hydro sees itself in terms of those interrelationships and, I suppose, its dollar commitment as well as its resource commitment in other ways.

Dr. Mills: Let me try to give you some examples of how we co-operate both with the Canadian Electrical Association and the Electric Power Research Institute in the United States. Both of those organizations pay us something like between \$6 million and \$8 million per annum for us to do research for them, which is research that would normally be of significant interest to Ontario Hydro, yet by doing co-operative research with these organizations, we get significant cost-sharing from them. This includes work on things like heat pumps.

We try to involve the private sector when we try to take some of these devices we have developed into commercial production. As a research lab we make one or two prototypes, but beyond that our capability to manufacture is not great. It is at that stage that we try to commercialize.

We have had a number of commercial successes over the past few years. Although it is not in the demand management area, we have recently entered into a business agreement with a company for a device that diverts fish away from intake structures and things like that. We have contracted with an electronics manufacturer to develop control devices that go on to our power stations. Again, we developed the prototype, but now this is out as a commercial product they can market throughout North America.

One of our employees left to set up his own private company and he now has a business doing, for instance, soil thermal conductivity measurements. He does that worldwide; so we do actively transfer our technology out. I think there is a reticence, and this was referred to earlier when someone asked a question—I think it was Mrs. Grier—about why technologies sometimes have been demonstrated offshore and yet these were not immediately adopted in Ontario.

Sometimes there are Ontario peculiarities, but frequently we run into what we call the not-invented-here syndrome. In other words, it is a requirement for the local company to have it demonstrated that it works and it will do things in its backyard before it will make the capital investment. So there is a conservatism, if you like—not your sort but the other sort.

Mrs. Sullivan: That is not my sort.

Dr. Mills: Not the political sort, anyway.

This sometimes limits the speed of the uptake into industry.

Mrs. Sullivan: Just to follow along, we heard about the manufacturer of a burner-assisted heat pump who was basically having trouble surviving in the Canadian market although apparently doing well in the American market.

Dr. Mills: He sold more of his units into northern New York state than he has into Ontario.

Mrs. Sullivan: I suppose this follows on a question we had two or three days ago about Hydro as an engineer of economic growth. What would Hydro's participation in that situation be?

Dr. Mills: We have been assisting this manufacturer all along, right from his very first basic units, which we have improved signifi-

cantly. There are a number of these units which we have sponsored out. When people come to ask about heat pumps, the Kool-Fire one is one which we particularly recommend, especially where, for instance, natural gas is not available, because this thing runs very efficiently on propane. There is already a very efficient propane distribution network throughout northern Ontario. In particular, it is good business for them. It is also a real peak shaver for Ontario.

I might mention that in the initial development of this unit the gas companies were interested until they found out how little fuel this unit actually consumed. When they found out how little gas it consumed, they dropped out of the development project.

Mr. MacCarthy: If I may comment a bit on that, one of the issues when we are working on a situation like this is supporting the technology rather than supporting the specific company in competition with other companies. That is a delicate balance we have to aspire to.

Mrs. Sullivan: I understand that.

The one thing that you did not talk about in your research presentation was related to research into energy from waste.

Dr. Mills: We did an energy-from-waste pilot project some five or six years ago to demonstrate the feasibility of that for the Lakeview power station. The project, I believe, was not completed because of local residential concerns about 24-hour trucking of garbage into that facility. It is feasible to burn a certain percentage of the heat requirement in a Hydro boiler but it cannot be 100 per cent in one of our existing units.

Mrs. Sullivan: But currently there is no research into that field by Hydro?

Dr. Mills: The actual technology is well established in Europe. Paris, France, for instance, has generated steam electricity from garbage for some 50 years. The only research one would need is to demonstrate that the feedstock garbage would not damage the internals of the boiler. That is the work that we did.

Mr. Argue: Just to follow up on one question of Mrs. Sullivan's concerning figure 11.3G-20, can you give us a breakdown of what the other 93 per cent of the research division's operating budget is spent on?

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Mr. Mills: We have 10 major programs at the division, including program 1, utilization, distribution, transmission and generation—which is split into nuclear, nuclear waste, thermal, hydraulic—and then a general research program

which covers our operations research group. That is the sort of thing.

The major portion of our work is focused on the generation side. It tends to be the one that poses the problems and the one which we have to ensure is going to function over a long time. Something over 30 per cent of our budget is devoted to nuclear research and development in support of the operating plant, in terms of developing speciality systems, for instance.

Mr. M. C. Ray: If I can just follow up on the question I asked earlier about the Premier's Council initiatives and the questions of Mrs. Sullivan, in regard to joint venture agreements you mentioned only joint co-operation with American associations. May I ask what Hydro sees as its future role in joint venture initiatives in foreign countries, the Third World, and what Hydro sees in the way of those joint ventures as a vehicle or source of technology export and employment creation in this province?

Mr. MacCarthy: Under my responsibility, we have a new business ventures division, specifically designed to exploit those opportunities. We are participating in a number of foreign projects. We have been in Indonesia, Korea and Turkey. We have been in—my mind is slipping—India, Kenya and Zimbabwe. Anyway, there is a wide range of activities where we have provided technical expertise and worked with other companies, quite often on a joint venture basis, sometimes directly, covering a whole range of energy activities, drawing on our operating experience to assist those countries.

Mr. M. C. Ray: I am assuming that these are profit-making ventures. Is that true?

Mr. MacCarthy: That is right.

Mr. M. C. Ray: And therefore a source of Ontario export in foreign markets?

Mr. MacCarthy: That is right.

Mr. M. C. Ray: And to some extent a source of employment, I suppose, within Ontario Hydro?

Mr. MacCarthy: As our bottom line for the new business ventures activity for this year, we expect to make about \$8 million.

Mr. M. C. Ray: In view then of the Premier's Council's suggestions that what Canada and Ontario specifically needs is a growth in Canadian-based, world-class industries, and service industries as well, has Hydro, as a corporation, set about a corporate policy in that regard? Have you modified at all or are you going to contemplate it further, or are there any changes

in the initiative that you can foresee as a result of stated change in government policy?

Mr. MacCarthy: One of the things I think could happen is the pursuit of more joint venture activities within Ontario, where Ontario Hydro has a specific equity position in those companies. At the present time, on the technology transfer, we might take some of the inventions that have been developed in the research and development area and farm them out to industry in Ontario. Essentially, the practice that we have adopted to date is a royalty payment associated with that.

For example, with regard to nuclear simulators, the simulators we have used in our plants, we have taken those and a number of sales have been made from an Ontario-based firm into the United States using that simulator technology. We have got royalties back from that, but we did not take an equity position in the company and to date we have not done that. That is something that is under consideration and could develop.

Mr. M. C. Ray: Where do we stand on the export of nuclear plant facilities and technology?

Mr. MacCarthy: I am not sure I know exactly what you mean.

Mr. M. C. Ray: In the sense of an increased initiative in that direction or potential markets?

Mr. MacCarthy: Let me try to address that. We have an isotope sales and services division, so that within the nuclear business ventures group, we produce heavy water for our own use in Ontario and we make sales of heavy water. We produce cobalt and we make sales of cobalt to Atomic Energy of Canada Ltd. in particular. We also have unique expertise in the nuclear area and we have provided some assistance to other jurisdictions. We had some people who were over in Italy providing assistance in that area. We had some in Korea and other locations. At one time, we had some in India too.

Mr. Mills: Specifically, in the nuclear area, the research division, in co-operation with the new business ventures program, recently supplied a reactor inspection system to one of the prototype Italian reactors, which resulted in a cash flow back to Ontario Hydro of \$2.5 million.

Mr. M. C. Ray: Is there anywhere you have this on paper, these kinds of initiatives and what the future corporate policy is?

Mr. McConnell: Mr. Ray, in presentation number 11, which was the introduction to the DSPS elements, I had indicated that the DSPS was really developed under the framework of a number of corporate initiatives. You will recall that I talked about it having to be consistent with

the corporate goal, the corporate mission, the corporate vision and the corporate guiding principle.

What you were talking about, I think you will find is under appendix 11.E in the presentation number 11 on page 6. That identifies the policy positions on these things that Mr. MacCarthy was talking about. That includes the fact that our primary effort will be focused on providing electricity for Ontario, but it acknowledges that we will market our knowledge, skills and byproducts nationally and internationally. Mr. MacCarthy has given you examples of where we have done that. Also, on the earlier point that you were talking about, it explicitly identifies the continuance of promoting the transfer of technology to the Ontario community.

There are two kinds of technology that we transfer to the community. We really want private enterprise in the Ontario community to have a leg up on the rest of the world wherever we can help. That partly comes about from our intrinsic knowledge as a result of our being in the electric business and it partly comes about from a dedicated effort in the demand management area to deliberately work on technology having to do with electrical use and transferring that knowhow to the Ontario community as a deliberate effort. A number of the examples of that were given by Dr. Mills this afternoon.

Mr. M. C. Ray: The only fear that we might have is that the transfer of technology to other than Ontario destinations—

Mr. McConnell: Let me put it this way, that our focus is on promoting the transfer of technology to the Ontario community. To some extent, if there is an industry and it is a Canadian industry which is partly based in Ontario and partly based in other provinces, if you are giving the knowhow in a plant to produce in Ontario, it is only a matter of time before it will be used by other Canadian plants.

If it happens to be an American-based organization, then that becomes something that we are a little bit more reluctant to transfer to than if it was an indigenous Ontario industry.

Mr. M. C. Ray: The same principle guides technology transfers to foreign jurisdiction as well?

Mr. McConnell: That is not our objective. On the other hand, we are still in the trading business. For example, Dr. Mills referred to heat pumps having to do with technology interchange with Sweden. We have no reservations about transferring our knowhow to Sweden, if they transfer their knowhow to us and we both benefit.

Yes, there is some technology exchange internationally where it is to our mutual benefit, but we are usually looking on that on the basis that we are getting something out of it.

Dr. Mills gave examples of the Electric Power Research Institute of the United States, which is funded by the electric utilities of the United States. We are quite happy there to take their money and to do research for them. Obviously, if

they are paying us to do research for them, we give them the results of our research, but on the other hand, we automatically take advantage of those results in using them ourselves. That works quite effectively too.

Mr. Chairman: As it is now after six o'clock, I will adjourn the committee till 9:30 tomorrow morning.

The committee adjourned at 6:03 p.m.

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Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy

Electricity Demand and Supply



First Session, 34th Parliament

Wednesday, August 10, 1988

Speaker: Honourable Hugh A. Edighoffer

Clerk of the House: Claude L. DesRosiers

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Contents of the proceedings reported in this issue of Hansard appears at the back, together with a list of the members of the committee and other members and witnesses taking part.

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Wednesday, August 10, 1988

The committee met at 9:40 a.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY (continued)

Mr. Chairman: If I could call this morning session to order, please. On the tables before the members is a copy of, I guess, what is becoming now known as the Kierans report. Mr. Ray, you will notice we now have received our copies. You have something to read this weekend.

Interjections.

Mr. Chairman: That is right. I think we will review this and see how relevant it is to our deliberations and see whether we want to include a component in our fall hearings relating to this matter.

If we could turn to this morning's agenda, we have one small item to pick up still relating to demand management, and that is the discussion on promotion and education. Mr. McConnell, could we perhaps proceed with that?

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Mr. McConnell: Yes. We have had a number of presentations here by Hedley Palmer, who is director of market services and development, dealing with demand management.

This morning I would like to introduce Dave Comissiong. Dave is director of the marketing operations division. He also reports to Dane MacCarthy. Dave has the major responsibility for delivering the goods in terms of these demand management programs that we have been talking about, and he will be talking about promotion and education.

Mr. Comissiong: I am dealing with the strategy element 3.7, "Education, information dissemination, audits and advertising will be pursued to make customers aware of the opportunities for the efficient and effective use of electricity."

By way of an introduction, I would like to review with you the need for promotion and education in this area.

Some electrical efficiency, obviously, will come about naturally as customers replace old equipment, improve the insulation in their homes and upgrade offices and factories. The question, really, is when, and can it be accelerated or influenced to make the best fit with the system?

Generally, the public is supportive of the wise and efficient use of electricity, but individual consumers and businesses have a variety of reasons for doing what they do and for making those investment decisions.

As I think we are all aware, Ontario is in a period of rapid economic expansion. Incomes are up, unemployment is low and the economic boom continues. It is not unrealistic, as consumers, for each of you to appreciate the impact on the public when people go the gas station and fill up their cars and the fluctuations they see in the price of gas and the relationship they make there between energy prices and how they feel about the need to conserve electricity. Obviously, under these circumstances, this need to conserve is not paramount in their minds.

It is very important that Hydro improve the customers' opportunities to make the best use of electrical efficiencies. We intend to do this through promotion and continuing to educate the people in terms of what it means to them and how we can accelerate this process of natural conservation.

Promotion and education is also important to make them overcome their inaccurate perception that conservation basically, to them, means doing without or having to deprive themselves of the lifestyle that these years offer us.

In terms of our current activities, Ontario Hydro's energy management programs have always had an element of energy efficiency designed into them. I could stress to you the fact that a program contains a number of elements. I refer to it, I guess, as being like a recipe with various ingredients. Over the last four or five years, the ingredient of energy efficiency has been part of the programming element.

Customer programs feature education through brochures, technical literature, case studies, advertising and face-to-face contact. The basic mix that we use in this area depends on the sector that we are dealing with. Energy audits for homes, farms, commercial businesses, institutions and industrial plants identify options to the individuals so that they can implement the best energy efficient options available to them.

Ontario Hydro's customer programs involve co-operation with the government. It has worked well in the past and we want it to work well in the

future. We have a common goal of energy efficiency. Some recent examples of co-operation with the government have been the energy monitoring program and an efficient street lighting program, which is now under development. The real issue here is to make sure that we do not duplicate our efforts and that in fact we are able to lever off of the activities and the initiatives of each group.

Looking at the commercial, industrial and residential sectors, I would like to highlight for you some of the energy management activities that we are involved in. First, looking at the commercial group, appreciating that there are approximately 350,000 customers in this group, the commercial sector decisions about energy are often not made by the people who in fact are the end-use customers. In large office buildings, for example, it is the developer and consulting engineer who decide which heating, ventilation and air-conditioning system goes in or what insulation levels go in or what lighting system goes in. It is not necessarily the tenant.

It is very important that we communicate the efficiency improvement options in the commercial sectors in a wide variety of approaches because we have to not only create information and interest from those people who make the buying decisions, but also from the potential tenants for those buildings and that, so they in turn can put back pressure on the developers, and so on, and demand the energy efficiencies.

A point I have to stress here, which is basically fundamental to all of this section, is the fact that demand management cannot be delivered solely by Ontario Hydro. Demand management, if it will be effectively implemented in this province, has to come through the co-operation of the channel, or with those allies, basically working with the manufacturers, distributors, contractors and consulting engineers. In unison, we in fact can work together to implement demand management and, with that, improvements in electrical efficiency.

Personal contact is basically the means by which we go after the commercial market. It is important that Hydro participate in this respect through trade shows, workshops and industrial associations. So it is very much a face-to-face type of environment when you are dealing with the commercial market. We work closely with the allies and the electrical manufacturers and distributors to basically complement what they are doing in promotion and education in terms of electrical efficiency and, in doing so, improve Hydro's activities in this area.

In terms of customer contact and services, we include energy audits, billing analysis and energy monitoring, where we in fact use a portable demand meter which is available through Ontario Hydro, to allow an individual to basically monitor his energy consumption at the point of use, which then allows him to have a better understanding as to how he is using his energy in his particular building.

Hydro is embarking on an increased emphasis on energy audits for the commercial customers. To do that, we are giving personalized service and advice in increasing energy efficiency. It is by getting into these buildings and explaining to people how they are using their electricity and where improvements are available that we can in fact influence their activities.

For example, in the Toronto Harbour Castle Westin, a 33 per cent increase improvement was made in the electricity bill by retrofitting energy efficiency lighting in hallways and in the parking garage and by making minor changes to the heating and cooling systems. The payback for that customer was less than three months, but he did not appreciate it until we actually went into that location and explained it to him.

Promotional tools are very important in the commercial sector. There are the newsletters that we use. We offer brochures to the engineers and to the architects in terms of those who basically are designing the systems. Direct mail is targeted at those decision-makers. There is targeted selected advertising in trade journals and all this brings attention to the fact that there are energy efficiency opportunities in the commercial market.

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As you appreciate, the industrial sector is different. It is more concentrated with larger users, approximately 16,000 customers, and in this sector the personal contact is even more important. Ontario Hydro's energy management programs focus on that personal contact and service by promoting electrical efficiency.

Activities such as plant energy audits and billing analysis help industrial customers to improve their energy efficiency, working in conjunction with the Ministry of Energy. We have worked closely in helping several customers in this area, including the recent energy monitoring program. We have used long-term relationships, and I cannot stress more sincerely the importance of building a relationship and credibility with the customer on a long-term basis to help them run their business. This is not an in-and-out opportunity. It is by building that credibility and

sustaining it over the long term that we in fact can influence the market, particularly with those major industrial accounts.

As I stressed, the ally contact is very important in the industrial sector, and it is true that we are able to influence the decision-makers, such as the engineers and the consultants.

Hydro's energy management programs specifically target industry associations and Hydro staff vigorously participate in trade shows, seminars and task forces that are often implemented by industry people. Again in the industrial sector, we use promotional tools such as newsletters, brochures and case studies to publicize the efficiency options.

In the residential sector, we have slightly more than three million customers, and I think you should be appreciative of the fact that everybody in this room, in essence, is a member of that grouping. When the residential customers leave their homes and go to their places of business, they transfer the attitudes that they take as residential customers to their industrial place. When a person leaves his home and goes to the plant, as a plant manager or as a commercial building manager, what he feels in his house he takes with him to his place of employment. So it is important that you lever off the residential market to get the word out on energy efficiency and its importance to also impact the other sectors. That is really the essential importance of a residential market.

Energy efficiency in this sector then uses more broad-based mass media approaches in terms of print advertising, newspapers and so on, through brochures, billing inserts and other literature, to target on those home owners. We also provide in-home energy audits to give the customers specific information and to allow them to better measure the opportunities they have to improve their electrical consumption in their homes.

For example, a very successful program was run this spring. We refer to it as the Tips program, but really what it amounted to was a public solicitation for ideas on how to save energy. I have a copy of the brochure here. Approximately 10,000 people in the province sent in their ideas and, through a committee represented by the Ministry of Energy, we made a selection of approximately the top 100 and published them in this booklet. We then used this booklet as a promotional vehicle to give people profile and also to inform people where some of those opportunities exist.

An interesting part of the brochure is the fact that there is a myths section in the back, because

in the process of getting the 10,000 suggestions, we found that there were a lot of myths out there in terms of what people believe are energy efficient options, but in fact are not. It is an example of how you can effectively communicate to the market. In fact, this booklet now is in its third printing.

We use trade shows and exhibits and displays. We actively participate in such things as the Canadian National Exhibition, the National Home Show. We are involved in the smaller regional home shows and fairs around the province and for those purposes, we use experienced Hydro staff to offer advice to the customers.

Model homes are important to us. You may ask why, but let me stress that there are approximately 40,000 new homes being built in this province each year and, by customer choice or preference, 10,000 of those are all-electric systems. It is very important to us that the 10,000 that are all-electric systems, built as all-electric homes, are to the highest energy standards available. So we actively participate with builders and developers in model homes to promote standards such as R-2000 and Double E, and to show the customers where in fact they can, when talking to their builder, ask for additional energy efficiencies built into their house.

As Mr. Palmer mentioned previously, we are looking to the end of this year to introduce the EnerMark energy management store in the Toronto area to basically promote the broad base of products and services we currently have available and to emphasize electrical efficiency with our customers. It is a case of getting out there and meeting our customer and becoming familiar with him and not only giving out information but also taking information input back to the corporation.

Through our agricultural sector, we provide energy services through our local regional representatives that include, basically, opportunities that are available on the farm for energy improvements. We do this through trade shows, personal contacts, various brochures and so on.

That is basically what I have to say on the promotion area.

Mr. Chairman: Perhaps we should give you a chance to return to your seat. Are there any questions of this presentation?

Mrs. Grier: I am curious about the relationship between your division and the municipal utilities. Perhaps I had better wait until Mr. Comissiong gets back.

Mr. Chairman: Wait a second.

Mrs. Grier: I just want to complete my thought, if I might. We had the presentation about municipal utilities, but it seems to me, in everything you say, that so much of what you are doing could be done as well or better in partnership with the municipal utilities.

One of the things that struck me is that when a new project, be it residential, commercial or industrial, is being proposed to a municipality, it is the local utility that is asked for comment. If 5,000 homes are going in and a rezoning is asked for, the local utility merely comments and power can be supplied. How much more effective it might be if the local utility said it would be preferable if this apartment building or these homes were built to such-and-such an efficiency standard.

What is the relationship between your section and the municipal utilities, or is that all left to the other section, for whom they are the prime responsibility?

Mr. Comissiong: We work very closely with the local municipal utilities. As indicated earlier, they basically account for 70 per cent of the customers. I could best describe the activities of my division as being the strategic planners and conceptual thinkers; we do not implement. We work through the channel, through regions, through our local areas in the rural system and through the utilities.

The utility has the option, obviously, of either taking the opportunities we offer or rejecting them. We hope, based on the type of work we have done and the fact that we have done our homework and find that it does work, that they will pick up on it and implement our plan.

Mr. Chairman: Are there any other questions of this presentation? Seeing none, thank you.

The next subject is rate-induced demand management. Perhaps Mr. McConnell can introduce the person who will be presenting that section to us.

Mr. MacCarthy: If I could introduce the morning's speaker, it is Barry Conway, the manager of our rates and strategic conservation department.

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Mr. Conway: The rate-induced demand management element has four things to say about rate-making. First of all, the rates should be based on average costs, and average and accounting costs are sometimes used interchangeably.

We have also said we will use time differentiation of our rates to achieve demand management. That means we charge higher rates in the daytime as opposed to nighttime and higher rates in the winter as opposed to the summer.

We also have used and intend to use something called special rates as well for nonstandard conditions of service. We would use them to help manage the load on our system as well. If we do that, these rates will be based on recovering the costs of the additional load incurred.

Those are the four things we have to say when it comes to rates and demand management.

To understand where those elements came from, perhaps you have to turn back a little in history, almost back to the 1970s when Ontario Hydro first attempted to change its current rate structures. At the time, we had a generic hearing in front of the Ontario Energy Board and one of the questions that was asked first was, "What are you trying to do with all these changes in rate structure?" We came up with these four objectives of why we are trying to change our rates. These have now been accepted by the Ontario Energy Board as well as our major customer groups.

One of the first things we thought we should do is recover the annual revenue requirement. Because that is made up by accountants and they look at the traditional sorts of costs like interest appreciation at income, it is often taken to mean that if you are going to recover the annual revenue requirement in total, your rate structure should also be based on accounting costs. That is where that first element that says rates should be based on average cost comes from. One follows from the other.

Next, we decided rates should be fair. After some debate as to what fairness means—because it is almost like beauty, it is all in the eye of the beholder—we decided that fairness meant that rates should track costs. That sounds simple, but it is not really when you begin to think about it. Some of our costs are more difficult to track than others.

For instance, it is fairly easy to track fuel costs if you look at when customers use their electricity and how much they use. You can usually determine what plants you have been running the supplies on and how much fuel you have used to provide that electricity.

The real problem comes when you try to decide how much of the plant cost the customer should pay. Those are called the fixed costs, and it is difficult to determine whether a customer should pay for the entire plant if he is on peak or

escape those plant costs just because he has been an off-peak customer. It is somewhat like the highway system. Who should you charge for the highway system, even though some of your drivers do not use the highway system at rush hour? It is the same sort of problem. We have had some interesting problems just trying to get a handle on what fairness meant.

We also said, and this is what this committee will be most interested in, I am sure, that rates should encourage the efficient use of our system. I suppose the most typical case of that these days is in fact time-of-use rates, where you charge more for electricity during the daytime than you do at night, hoping the customers who can will shift their use from the daytime to the nighttime and make better use of your generating system.

In fact, that is what we have been encouraging for quite some number of years now. We have just put a proposal in front of the Ontario Energy Board to try to differentiate our rates starting in 1989 and we are waiting on its deliberations right now.

The last thing we have said, and it has proved to be the most interesting, I suppose, is that all our rate structures should have some element of public acceptance. That sounds fairly straightforward, but it has almost been our Achilles' heel, because we have taken a long time trying to generate the public acceptance around our rate structure changes.

When you are trying to recover the same revenue and yet you are restructuring your rates so that some customers will end up paying less for electricity, that means that some customers are going to end up paying more, and they invariably think that is a bad idea, whether the end objectives are laudable or not. So we have had quite some time trying to convince people that our rate structure changes are appropriate. We spent the last three years coming up with an agreement on this new rate change with our major customer groups, so we are well on the way to achieving that public acceptance now.

As you all know, the Ontario Energy Board is a pretty crucial part of our rate changes. As a matter of fact, we are required by statute to file a rate proposal with the Ontario Energy Board, but it involves only certain customers of ours. The rates the OEB sees involve only the rates we charge our municipal utilities, and there are 317 of those in the province. Basically, it is our wholesale operation. They also see the rates we charge our very large customers, called direct industrial customers. They are big customers that

we supply in amounts that exceed 5,000 kilowatts, which is pretty big by anyone's terms.

As I said, we just recently put a proposal in front of the Ontario Energy Board to revise our rate structure at the beginning of 1989. That all happened in June, and we are currently awaiting the recommendations of the board, which normally come out at the end of August. I might say that the board has been pretty instrumental in the area of rate reform. As I said before, they helped us put the four rate objectives together. They have also been encouraging us all through the years to adopt time-of-use rates, and that has been pretty helpful in discussing this whole subject with our customers.

With regard to the other customer rates, there are about three million retail customers in the province. Something in excess of two million customers are served by the municipal utilities, and once our wholesale rates are approved in October, they in turn submit their rates, after they add on their local costs, to Ontario Hydro. We regulate the municipal utilities and we approve all the rates for residential customers in the province. We also supply 800,000 rural customers directly, and those rates are also approved about October of each year.

To give you an idea of what is happening in the rate structure reform, the rates that are up here right now are the typical rates we have for our direct industrial customers. They have two components. There is something called a peak charge, which is based on kilowatts. In 1987, that was \$8.15 a month. You can see it was the same in the winter as it was in the summer. We also have an energy rate in our rate structure. That is the other half. In 1987, it was 2.13 cents per kilowatt-hour. We have a two-part rate. Part of it is based on peak demand and part on energy consumption. I suppose a good analogy is renting a car, where the peak demand would be like the rental charge and the cost of the fuel would be like our energy charge in the rate structure.

It is a crude sort of signal to flatten your load down and utilize your load as best as possible. But it is not perfect, as you can see, because it really does not say it costs more to provide electricity in the wintertime and it really does not say it costs more to provide electricity during the daytime, and we think that should be improved. I guess it has taken some 13 years, but we have set about changing it.

There are two kinds of changes that we proposed. I have told you that we were intending to time-differentiate it. As well, we collect about 50 per cent of our total revenue from energy and

50 per cent from peak demand. We feel that is too low; that energy should really be a bigger component of our revenue recovery. We feel that if we raise the energy charges, we will get a little more conservation of energy as a result of the rate structure reform as well.

There are two things going on at the same time: time differentiation and an alteration of the ratio between peak demand and energy. It has given rise to a new kind of rate structure where the demand charges now are differentiated between winter and summer. You can see that the demand charge has actually gone down in the summer and stayed about the same in the winter. We did that, in part, intentionally.

I do not know if you are familiar with a time-of-use experiment we also have going on right now with about 500 residential customers in the province. The trick there is to try to find out how much they will respond to the new rate structures. We have been doing this for almost five years now. We were canvassing them each year to find out how they liked the new rates. In the first year we sent out the survey, we gave them a little bit of preamble and said: "Because of the way we run our generation system, it costs more to produce electricity in the winter than it does in the summer. So is it a good idea to have higher rates in the winter?" Of course, human nature came forward and they all said: "No, this is a very bad idea. You shouldn't have higher rates in the winter than you do in the summer." We were kind of disappointed and went away with our tails between our legs and did not publish the results of the survey for a while.

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About a year or so later, the survey came up again, and this time we give them the same preamble. We said: "It costs more to produce electricity in the winter than it does in the summer. Does it make good sense"—we asked this time—"to have cheaper rates in the summer?" They all said, "Yes, that is a very good idea." So we listened to them and we managed to reduce our demand charges in the summer and keep them about the same in the wintertime.

These demand charges, incidentally, now apply only during the daytime, so that customers who tend to peak or who will change their operation to peak at night will now escape that peak demand charge. That is a pretty significant change in itself. You can see we have also changed the energy rates, too. There are now four energy rates for the four different times of use. These three at least are significantly higher.

In general, energy costs more in the wintertime and it costs more in the peak period. So we are hoping to encourage customers to alter their patterns of use. As a matter of fact, we did do a calculation which I will get to in a second.

Just to cover off the situation with municipal utility rates, the rate structure changes we are proposing for municipal utilities—that is the other part of our wholesale sales—are approximately the same as those we are proposing for our direct customers. The rate structure looks about the same. It is slightly different, but mostly the same. There will be time differentiation and there will also be this alteration between demand and energy charges.

The rangle with the municipal utilities is that we have offered this rate on an optional basis. Unlike the direct customers, the municipal utilities are going to take more time to adapt to the new rate structure changes. They have to work with their two million-odd customers as opposed to 105 big industrial customers. So it is going to take a little while.

There were some concerns, particularly in northern Ontario, about seasonal rates. Our solution to this whole problem, and it seems to have worked quite well, is to offer the new rate structure on an optional basis. The utilities that were formerly concerned about the effect of seasonal rates can now opt away from them if they do not feel they are appropriate for their utility. That is another way in which we have managed to gain a little more public acceptance with these rate structure changes.

While they are optional for the municipal utilities, they are mandatory for our very large customers. That is about 25 per cent of our sales and that is the 25 per cent that is thought to be the most responsive to time-of-use rates in the first place. We seem to have gained on both sides of the issue. We have time-of-use rates where they seem to be able to do the most good, we have them optional where they seem to be causing some concerns and we have managed to move the whole package forward.

Our current work in the rate department is concern with putting together new retail rate-making guidelines for residential customers so that the municipal utilities which opt for the new rate structure will be able to pass that along to their own customers.

This is a graph illustrating the incentive to shift to off-peak for our very big customers as a result of the new rate structure. The incentive is roughly three to one. The cost of electricity is

roughly three times as great in a peak period as in the off-peak.

We have done some calculations. This graph shows that if you shift five per cent of your consumption from the peak to the off-peak, your electricity bill will go down by about 4.5 per cent. That is a pretty good incentive; it is almost one to one. It has attracted the attention of a lot of industrial customers right now. They are quite busy with their pencils trying to figure out ways and means of beating the new rate structure. We are kind of happy with the early indications we have gotten from large industry.

We have also done some analysis of what this might mean for large customers in the commercial sector. These are typically served by municipal utilities as opposed to Ontario Hydro, but they can be very big, too. As a matter of fact, the municipal utilities serve about 120 customers we call large users; they are also in excess of 5,000 kilowatts. For instance, Toronto Hydro would serve the Toronto-Dominion Centre in this category. Therefore, these rate structure changes are important to commercial buildings as well.

This graph demonstrates the effect of the new rate structure on a commercial building. The overall effect is that in general the cost of power for these kinds of large users will go down by about four per cent.

There is a third element of the package that I have not mentioned before. In the past, there used to be a difference between our direct rate and municipal utilities' large-user rate. In this package, we have managed to equalize those two. It is no longer an important factor, in locating in Ontario, where you go in terms of your electricity costs. They will be the same regardless, if you are a large customer now. So the overall effect for municipal large users is a reduction of about four per cent.

This particular calculation happens to be under four scenarios for a commercial building that has thermal storage characteristics. What we are trying to demonstrate here is that it makes sense to put in something called ice storage. This is an August bill for a typical building. Ice storage is a way of air-conditioning where you make ice at night and you use the ice during the daytime for air-conditioning purposes. So while you have not changed the pattern of use in the building, you have changed your pattern of electricity use.

This graph shows that a typical August bill would drop from about \$171,000 for August, with no changes at all, down to \$138,000 because electricity is going to be cheaper in the summer. If you introduce ice storage into the

building, it drops down to \$115,000. I have been running around the province showing all the large building owners just how good these new rate structure changes are. I have been using that graph to demonstrate the effects.

I touched briefly on smaller customers before. There are some issues to do with residential customers and time-of-use rates. The major catch with this new rate structure is that you have to have an intelligent meter in order to have a time-of-use rate. The meter has to know when it is daytime, when it is night-time, when it is winter, when it is summer, when it is the weekend and when it is a weekday. It costs more money for metering under those conditions. In fact, the cost of a time-of-use meter is something in the order of \$200, compared to about \$60 or \$70 for the standard meter that is in your house right now.

You really want to convince yourself that you are going to get the return for the extra investment. That is why we have been doing this time-of-use experiment with the 500 customers sprinkled around Ontario. So far, we have found out some pretty interesting things.

We found out that most of the customers seemed to like the new rate structure whether or not they have taken much advantage of it. In fact, some customers actually lost money but still liked the new rate. I am trying to figure that out still, but I think it means they like the options that the new rate introduces, the ability at least, even if they do not exercise it, to do something about their electricity costs.

Mr. Runciman: Maybe it is the way you phrased the question.

Mr. Conway: No, it was not that time around. We asked it in a couple of different ways.

We found that some but not all of the customers actually do respond enough to make use of the new rate. So there is a question about how far down you go with the new rate structure. There is also a question about the availability of these new meters. The timing is great. This is still a relatively new phenomenon in North America, although it has been used in the States.

The production capacity for meters is not great in Ontario yet. It is a bit of a chicken-and-egg situation, but it is improving. The cost of metering has dropped significantly in the last couple of years, but there is still a disadvantage of about a three-to-one price difference right now.

We will have to be thinking about where to draw the line, so to speak, in regard to mandatory application of time-of-use rates. Underneath that

line we will probably be recommending that utilities introduce time-of-use rates on an optional basis, just as we have introduced them for the municipal utilities themselves. All the residential customer will have to do is pay the extra cost of the metering and then he will get the time-of-use rate structure. So that is the time-of-use rate scene.

We also have another animal called special rates. These are add-ons to the standard rate structure. Probably one of the most common of those is something called an interruptible rate. This is a scheme that is used with our very large customers. We give them a discount in their electricity bill if they will allow us to interrupt their taking of electricity when we are in trouble. So we supply them basically out of what we call our reserve margin in the system. We do not bill generating capacity to supply them.

We have about 40 customers who are on this interruptible rate. When we call on them to stop taking electricity, that basically opens up about 600 megawatts of freed capacity for us. That is the amount of capacity that we roughly save serving these customers. There are a lot of utilities in North America that have this kind of interruptible scheme. Ontario Hydro is one of them.

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We also have something in our rate structures to add on to the regular rate called scheduled hour power. This is really a forerunner of time-of-use rates where there was a discount offered for the off-peak taking of electricity. It was not a particularly popular rate structure until just recently, when it became obvious that time-of-use rates were going to be introduced by Ontario Hydro, and now we see more and more companies getting on the rate structure.

We think it is because they are trying to gain some experience with time-of-use rates, because the discount actually is not as favourable as that the new rate structure will provide. This is leading us to the idea that they are looking for experience to prepare for the new rate structures that are coming. That will be phased out next year when the actual time-of-use rates do come in.

We have something called special condition rates too, which are rates that were geared to the current surplus nuclear capacity we have off peak in the summer. We sell that capacity at a reduced price to customers who are willing to create a new taking of electricity, during the summer weekends, for instance. For that we charge them

a low price, based on the additional cost of the fuelling in the nuclear plants.

We have been able to generate a bit of new business and also save a few businesses from going out of business as a result of this discount electricity. Because the surplus will begin to go away in the early 1990s, these rates will be phased out about the middle of the next decade. We have promised the Ontario Energy Board, for instance, that they will be phased out by 1995.

In the meantime, we have managed to shape our load once again to everyone's benefit, because we make some contribution to overhead. Not only are the customers who are taking the power better off because they are getting cheaper electricity, but also the rest of the customers who are sort of standing idly by, who paid for the generation in the first place, are getting lower rates because of this contribution to overhead. Everyone is a little better off as a result of these sales.

There is another kind of load control that you get indirectly. Rather than having time-of-use rates apply, some utilities control water heaters in Ontario, Toronto Hydro being a good example. There are 13 of these municipal utilities and they control about 160,000 water heaters. What they do is shut off these water heaters as their peak approaches and turn them back on after the peak is over.

The trick to this is that you are leaning on the inherent storage capacity of the water heater. You do not want to turn this water heater off for too long so that your customers run out of hot water, so it is a bit of balancing act. But it is a way in which utilities have been able to load-shape their own takings from Ontario Hydro.

We are actually hoping that those utilities that do not think it is a good idea to pass the time-of-use rate directly on to the customers will adopt this water heater control strategy instead. It is like interruptible power. They offer a cheaper bill for the privilege of interrupting these water heaters. The trick to this is that they probably will have to go to larger water heaters in order to be able to cut the water heaters off for a longer period of time to fit in with our time-of-use rate. That certainly is another indirect way of getting some load control on this system.

Just returning for a minute to the interruptible rates themselves, this is an outline of what we have on the interruptible rates right now. We have 42 customers. We get about 600 megawatts when we cut them. Here is the schedule of interruptions that have happened for the last three years. You can see that while we could interrupt

customers for as much as 800 hours of the year, except for the heat wave this year, they have not been interrupted that much.

You will see that figure begin to climb as our capacity slowly begins to reach an optimum level in the early 1990s. There will be more and more frequent interruptions of our interruptible customers. That is the name of the game. That is why you want to have them there, so you can interrupt them and not build capacity and you can supply your other customers with a firmer reliability of supply.

Just to sum up then, I have covered the role of our rate objectives and how they fit in with the strategy elements in the demand/supply options strategy. I hope that I have been able to convince you that they are well founded, they tie together and they have a wide degree of public acceptance.

We think that with this new rate structure we are adopting next year we will be generating even more opportunities to load-shape on our system. We figure that about 500 to 600 megawatts will be created from time-of-use rates just on our very large customers. We have about one million water heaters in the province that can be controlled, and that could give us another 1,000 megawatts of control if we decided to use it. So we are well within our target in this area of 1,000 megawatts by the year 2000. Those are my formal comments for this morning.

Mr. Chairman: Thank you, Mr. Conway. Are there any questions?

Mr. Runciman: Just a few brief ones, Mr. Chairman. You talked about metering costs for installation of time-of-use meters. You suggest that one of the possibilities is that consumers are simply going to pay an extra fee for the installation of a new meter. Is that what you were suggesting?

Mr. Conway: That is the traditional course of action, because the meters do cost in the order of \$150 more. Typically, the utility will say, "If you're willing to pay that extra cost, we'll put you on a time-of-use rate." That is the normal approach actually. There are two variants. Some utilities in the United States have said, "Give us \$150 right now," and some utilities have said, "Well, if you pay an extra dollar a month, that'll cover off the extra cost." The second approach is probably the one we will take.

Mr. Runciman: I guess it would be the utilities' decision in terms of whether they wanted to make it mandatory. There would be a lot of heat over that sort of proposal.

Mr. Conway: I think we will have to give a pretty strong guiding hand in that area. The results of our own experiments and a lot of the US utilities which have adopted these rates have found out they are not good for everybody. The little old ladies who consume 200 kilowatt-hours a month really do not adjust their consumption patterns, and it is really not worth putting in that extra \$150, if I could use that expression. With very small customers, you want to have some selective kind of approach, and optional rates are one way of doing it.

Mr. Runciman: You have indicated that the special condition rates only apply to incremental load. What does that mean?

Mr. Conway: It basically means new load. As an example of that, quite a few parallel generators in the province generate their own electricity using gas, but there are months in the summer in which we can supply their electricity cheaper than they can make it out of their gas turbines. So they would switch over. Basically, it is a new load to the hydro system and we call it incremental load.

In another case, we had an industrial customer who had shut down a production line because electricity costs were just too expensive for him to continue making the product. When we offered the reduced rate, he could bring the production back into service. Once again, that looked like a new load, an incremental load, to the system. In that case, you can look at the incremental cost of supplying it.

Mr. Dietsch: I had a supplementary to the question about metering and it not being necessarily good for some people. If I, for example, as a small user, wanted to put that kind of meter in my home, would you do some type of analysis to tell me whether it is worth while?

Mr. Conway: We have not got to that point yet. We are really worried next year primarily about getting this rate structure in for the utilities and the customers. We are asking questions such as you have just asked about what the best approach strategy is for smaller customers. That is an approach which is used quite frequently. As a matter of fact, I think Florida Power and Light does such an analysis for people who are interested in its time-of-use rates. It is something we will be looking at.

Mr. Runciman: I would still like to get a better handle on special condition rates. What would that represent in terms of your total production? What would it represent in any given year?

Mr. Conway: Sales to date have been something like 100 megawatts. We have another program which will probably bring in another 100 megawatts. It is about 200 megawatts on 20,000, not a really big program.

Mr. Runciman: It is not a significant factor.

Mr. Conway: The reason for that is that once you get into a really significant program, you have to ask yourself if this is really new load to Ontario or if you are really just giving away electricity at a cheaper price. You have to run that balancing act with this program.

Mr. Runciman: What was the relationship here with parallel generation?

Mr. Conway: In the summer, there are occasions when it actually makes more sense to buy the electricity from us than make it themselves, because the cost of gas does not go down in the summer but these rates are available at a cheap price in the summer. It makes sense sometimes for them to turn their generator off and say, "All right, Hydro, you supply me with the electricity I used to make myself," and next month when the rate goes back up—one of the rates is variable, month by month—if it goes up too high, to say: "Well, I'm not interested. I'll just make my own electricity, thank you."

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Mr. Runciman: Would you do the same sort of thing for a small utility company, say Gananoque Light and Power, which happens to be in my riding?

Mr. Conway: Yes.

Mr. Runciman: Would that sort of a program be made available to them?

Mr. Conway: It was available to them, but they have not been interested so far. They are not making extensive use of their diesel generation. A lot of theirs is water generation, so it is quite cheap for them, unless they get into their diesel count.

Mr. Runciman: In your early comments you mentioned the objectives of rate-making to recover the revenue requirement. Are you talking about the total revenue requirement of Ontario Hydro?

Mr. Conway: Yes.

Mr. Runciman: When you are preparing your budgets and setting your rates, you are looking at recovering your total revenue requirement through the rate structure.

Mr. Conway: That is right. There are two issues about rates. One is rate level, which is really where the revenue requirement addresses

itself; but as the manager of the rate department, I am more interested in not the size of the pie, which is the rate level, but how to divide the pie up between different customers. That is where rate structure comes in. It essentially says this customer group is going to pay more towards the revenue requirement than that one.

Mr. Runciman: When you take a look at the total revenue picture of Ontario Hydro, what percentage do rates represent?

Mr. Conway: It had better be 100 per cent or my job is in jeopardy. It has to bring back the total requirement.

Mr. Runciman: That raises some other questions about other sources of revenue that we were talking about in the past couple of days which you have suggested are rather significant.

Mr. MacCarthy: Perhaps I can help here, Mr. Runciman. What we do is prepare a forecast which includes our total cost and estimates of additional revenue we would get, either through things like our new business ventures activity or export sales. That would be incorporated in the total picture.

Once that total picture is put together, that is the revenue requirement which is effectively transferred over to Mr. Conway, and it is his job to come up with the rate structure that will give us that revenue in the subsequent year. That is what we take to the Ontario Energy Board for its consideration.

Mr. Conway: Right. It is not our export profits, for instance. I guess a better word would be "domestic" rather than "requirements." They are revenues required from our own domestic customers.

Mr. Runciman: What percentage of that, in terms of your rates, is directed towards servicing your debt?

Mr. Conway: Of the total?

Mr. Runciman: It would probably be higher than 50 per cent. We have talked about service of the debt representing about 50 per cent of your revenues, but your revenues also include things other than rates. So we are suggesting that in terms of percentage of rates, the percentage directed towards servicing the debt is probably much higher than 50 per cent.

Mr. MacCarthy: I would not think that it is much higher than 50 per cent. As I recall, it probably would be in the order of slightly less than 50 per cent associated with servicing the debt; and these other components are relatively small in the total revenue we receive. I do not

think it would be any higher than 50 per cent, but we can break that down.

Mr. Runciman: Could you confirm that?

Mr. MacCarthy: Yes.

Mr. McConnell: We will have that number for you just after lunch.

Mr. Runciman: All right, fine.

Mr. Cureatz: In the city of Oshawa, I believe they had an experiment through the local commission about cutting off water heaters.

Mr. Conway: Yes.

Mr. Cureatz: I was not clear when you mentioned about the aspect of paying more because it is interrupted power. Does that mean the user?

Mr. Conway: I was hoping I had suggested they would end up paying less if they were amenable to interrupting their water heaters. That is the drill.

Mr. Cureatz: That is what you shoot for?

Mr. Conway: Right.

Mr. Cureatz: But is there not something about interrupting their supply and switching on and switching off?

Mr. Conway: Well, the experiment in Oshawa—and it was not only in Oshawa but in Scarborough as well—was with early versions of controlled water heaters. It was an experiment, but we did give a cheaper Hydro bill for the privilege of interrupting and we tried to get a handle on how much we could interrupt a 40-gallon water heater as opposed to a 60-gallon water heater.

We found out we were looking for a broad interruption, as long as 16 hours, and neither one of those are all that amenable to that, so we have started looking at much larger water heaters in the 100-gallon range. The general approach is that you offer a discount of \$1 to \$3 a month for the privilege of interrupting the water heater. The utility has to balance just how much it gets for the price it pays the customer.

Mr. MacCarthy: If I understand your question, there is the potential of what they call a fly-back, so that if you turn off the water heater and if it is done for an extensive period of time and then all the water heaters come back on, the fly-back feature may more than compensate for the reduction, so you are trying to stage that in incremental—

Mr. Cureatz: That would be through the timing of the heater.

Mr. MacCarthy: That is right.

Mr. Cureatz: Even with the amount of electricity you need to warm it back up, you are still ahead of the game by shutting it off.

Mr. Conway: That is right. We will typically try to get the fly-back and any recovery into the off-peak period, so the cost of recovery is quite a bit lower.

Mr. Cureatz: Is there any long-term plan?

Mr. Conway: Actually, as I said, we are concentrating on getting a time-of-use rate. Then we are going to introduce some sort of plan for the residential customers that is a combination of time-of-use rates and water heater control. It will probably be a utility option, which route they want to take.

Mrs. Sullivan: I have a question, first of all, relating to the timing of rates. I wonder if as the summer load increases, as it did the other day and we were into a difficult period, there is really validity to maintaining a differential in rates between summer and winter. For example, people use more air conditioning as a natural part of their life rather than as something that is a luxury.

Mr. Conway: That is a great issue, one that we debated for some time. As a matter of fact, the differences between winter and summer are not nearly as great as the difference in the rate structure between day and night. One of the reasons is that the gap between the winter and summer load is now closing. At the rate it is closing—even though we have had a phenomenally hot summer; it is fairly abnormal—I would say it is going to take at least 30 years before it really gets to be a binding issue on the whole system in Ontario.

You have utilities, like Toronto Hydro for instance, that right now have a higher summer peak than it had last winter. We call it a leap-frogging situation. What they will probably do is take our wholesale rate and say, "That may be how wholesale costs are, cheaper in the summer, but our distribution costs are basically incurred in the summertime." They will probably arrange for most of their distribution costs to go into the summer part of their rate, and that will tend to balance things out where it is an issue, like Toronto.

Mrs. Sullivan: In terms of the implementation of time-of-use rates, a municipality could implement a totally different seasonal scenario from what Hydro had originally planned.

Mr. Conway: Where it makes sense, yes. We are working on the retail rate guidelines right now. For utilities that have a summer peaking

tradition, where their distribution costs are basically incurred in the summertime, we will allow them to go the other way. Probably those utilities will be the ones that are the most interested in things like this ice storage strategy I was talking about before; Toronto Hydro in particular because of all the commercial buildings downtown.

Mrs. Sullivan: Just generally, I wonder what new costs would be associated with creating a new load at a different time. What other things would Hydro have to consider about its own operational costs that would impact on the rate structure ultimately?

Mr. Conway: There are three prime costs in making up a rate structure: One is fuel; another is generating plant costs, and the other one is metering costs, customer costs. For very big customers, while metering is expensive, it is a very small part of the overall operation. When we put in a meter for a big customer, it is already sophisticated enough to handle time-of-use rates. We do not need to put in a new meter for them, so that is not an issue there. If a customer comes in and is, for instance, totally off-peak, that would be one case. The only thing we would really be incurring to supply him would be the extra fuelling costs that sort of run off our generators at night-time. That would be the only issue.

Typically, a time-of-use rate says: "You should pay only the fuelling cost, and if you are not in a peak period, we will not charge you for the cost to the generating plant because you really are not causing it to go in the first place. You are just using it while it is sitting idle." Those are the kinds of concepts that are involved. Metering costs are not an important issue for big customers, but they are for small ones.

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Mrs. Sullivan: Fuelling costs would be a significant factor in terms of your planning for the large customer.

Mr. Conway: That is right. The fuelling cost in the old rate structure was about 50 per cent and we are saying it is now at least 60 per cent. Fuel is a big part of our costs, yes.

Mrs. Sullivan: Would there be a different labour component?

Mr. Conway: I would say it is not significant. Typically, labour that is incurred to operate our generating plants is there anyway, and there will not be more labour costs as a result of running it at night-time. There might be some additional maintenance required. Any time you use a

generating plant more, you have to maintain it a little better, so there will be a small effect.

Mrs. Sullivan: The third question relates to dealing with the peak, the kind of situation that occurred last week when you really want people to get off the system for a little while. I assume the customers with the interruptible rates are the first off. You simply say to them, "You are off, guys."

Mr. Conway: As a matter of fact, we interrupted them every day last week.

Mrs. Sullivan: What kind of customers are they?

Mr. Conway: They are big. They are industrial customers. They have processes that are amenable to some sort of interruption. That typically means they have some storage capability so that they can store their product. For instance, a cement company grinds rocks to make cement. When we ask them to interrupt, they shut down their grinder, but they have a bin with all this ground-up cement and they keep their production line going. It is instances like that.

Some companies cannot stop their production process because the product—plastics, for instance—will freeze up in the pipes and the cost of putting the operation back in place is not worth the saving in the electricity rate.

Mrs. Sullivan: I expect that most of the resource industries would be similar to that, such as steel production.

Mr. Conway: Yes, there are steel companies on the interruptible rate. Their furnaces are interruptible. There are some parts for pulp and paper, but not very many because in the main, once you get a rolling mill going, you do not want to shut it down because it takes hours to thread the paper.

Mrs. Sullivan: Of those customers that are using interruptible rates, would there be many that are able to use interruptible rates because they have adopted energy-efficient processes, or would it simply be because of the natural process of their manufacturing or processing operation?

Mr. MacCarthy: I think many of the large customers are our most energy-efficient customers, because it is a significant component in their total operating costs. They are interested in keeping those costs low.

There is another dimension. In their cost analysis, they have found that if they get some advance notification of a potential interruption and shut down a line for a period of time and reduce their peak—because that is what we are

charging them, on the basis of their peak contribution—it is worth it to them. They have control devices so that when they get the word from our operators that there is going to be an interruption in 20 minutes, then, bang, down that line comes. They have built-in contingency plans so they can move staff around. They are quite sophisticated in their use of interruptible power. That is not necessarily associated with an efficiency dimension. It is essentially a cost dimension.

If I can add one other thing, there is an issue with the interruptible. I have a customer who called me earlier this week who was concerned about the number of interruptions and desired to move from an interruptible rate situation to a firm rate situation because of the frequency of the interruptions. That is an issue as you get more and more interruptions. As it has greater value to Ontario Hydro, it has a more significant impact on customers. The appeal of an interruptible rate may vary.

We have a feature in there so that they can move from an interruptible rate to a firm rate, but for a two-year period they would be the first of the firm customers that were cut. While they would be paying a firm rate, they would still be cut if necessary. It is not an easy movement from one category to the other.

Mrs. Sullivan: Just following up on moving people off when you are into a situation such as we were in last week, would the customers who were on special condition rates be the second off or would they go off at the same time as the interruptible customers?

Mr. Conway: They are considered interruptible customers so they would go off at the same time. Now, this year is exceptional. We typically do not interrupt in the summertime, but we happen to be in some difficulty this year. These special condition customers are not there in the wintertime, which is the more usual time of interruption, because the cheap power is not available in the wintertime. We are using all our plants to supply the rest of our customers. It is typically not an issue, but it happens to be a bit more of an issue this year.

Mrs. Sullivan: This is a bizarre question, but I think of a time when I lived in England where people fed money into the meter to get electricity in their residences, a different kind of metering, I guess. Have we ever used that in Ontario?

Mr. Conway: We have not to date, but we are actually doing a pilot with Toronto Hydro on something called prepayment metering, which is also known as credit card metering. There is a

system in England that has got quite sophisticated, but the one we are looking at has been adapted to the North American market. It sounds almost too good to be true.

Electricity is one of the few services that is still supplied on an honour basis where we collect after the fact. This would be a nice way to improve our cash flow. The thing that surprised me was that the results with this system in the United States are that people seem to like it too. I did not think they would, but they seem to like the budgeting that comes out of this whole system. There is a conservation effect as well. I think it was reported that in one case, 10 per cent less electricity was used in a rental building. We are quite interested. I will tell you better in a year where it went, but we are putting in about 50 test meters in Toronto.

Mrs. Sullivan: That is interesting. Certainly, in England they put on their sweaters instead of feeding the meter. It might work.

Mr. Charlton: My questions on interruptible rates got answered. I have a couple of quick questions on time-of-use rates in the residential sector. As you have said, you have been doing some pilot projects. It is my understanding that basically you looked at two models, one with a daily peak from 7 a.m. to 11 p.m. and another model with two daily peaks, one in the morning and one in the early evening.

Mr. Conway: As a matter of fact, no. In fact, we have been criticized for this to some extent. We have about 17 different rates in the experiment, all different kinds. The ones you described are in there, but we also have rates that just have winter and summer and no time of day and we have rates that just have time of day and no winter and summer.

It is a research project, so you want to get an idea of how customers will respond to lots of different structures. Lots of different price ratios were used. There are three different price ratios too. The lowest one is about 50 per cent higher. The highest one is about four times as great between the peak and the off-peak. The experiment is very well put together. It was modelled after one of the best experiments that was done in the US in this area. I would say we are going to get a lot of very good information.

We will be able to adapt the results of the experiment to utility-specific circumstances. Some utilities, for instance, do not want to have this broad 16-hour period in their residential rate that we are going to have in our wholesale rate structure. Probably some of them will want to have a four-hour peak because they think they

can do more with that. We do happen to have some four-hour peaks in the experiment, so we can say "If you want that, this is typically what you're going to get back as a response."

Mr. Charlton: That is what I would like some information on. Perhaps you cannot provide it now. It is in terms of the two examples I cited. You have daily time-of-use rates from 7 a.m. until 11 p.m. as the peak period and the off-peak being the rest of the day. The other option is where you have the two daily peaks, the morning peak and the early evening peak. Can you tell us what the results were of those two models?

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Mr. Conway: My recollection of the broad peak sales was there was more than one. There were two or three different price ratios used. The typical response was about a three per cent shift from peak to off-peak, something like that. The one we called the saddle, where it had a noon-hour dip in it, was similar. It was not that different. That is my broad recollection. We file information with the Ontario Energy Board on the course of the experiment each year. I could perhaps send it to you if you were interested.

Mr. Charlton: I would be interested in having a look at it.

Mr. Brown: I am concerned about rates and the rural experience. It is the fairness issue I suppose more than changing the demand.

I am wondering, have we had a look at, first, how much disincentive there is for one to be in a rural area rather than in a municipal area or an organized area? I understand there is about 15 per cent on average, but how does that really work? You must have looked at those numbers and seen how much more it costs to live in a rural area or to operate a business in a rural area compared to living in a municipal utility area.

Mr. Conway: I cannot tell you very much other than how much more it costs to supply electricity in a rural area, which is at least in the order of 30 per cent. We are required by statute to limit the difference in the rates to 15 per cent. I really do not have any other information on what cost savings or extra costs there are in living in rural areas. There are some things that cost less and some things that cost more, I guess. I happen to live in a small town myself.

Mr. Brown: I am just thinking of my riding in particular, which is a northern riding. If we talk about paying more in the wintertime and we look at already paying more for electricity, it would seem to me that part of the rate structure would be encouraging people to move to southern Ontario,

to be moving to the urban areas rather than developing an area like ours. It would seem to be a disincentive. Has Hydro looked at those kinds of issues when it looks at rates?

Mr. Conway: We had to face that one square on, as a matter of fact. The first run we took at seasonal rates was in 1982. All of northern Ontario said, "Whoa, just a second; it is a bad idea." Along with some other customer groups we were able to stop the process. That is where we came up with this optional part of the package.

My information at this point is that all the northern utilities, save one or two, are not going to take the time-of-use option because they are worried about just what you said. It is really a matter of those who want to can and those who do not like it do not have to. There are a couple of utilities, as I said, up north that are very interested in the time-of-use package. There are some pluses and minuses.

Mr. Brown: The other thing with rates that concerned me, again with the fairness issue, is that in much of Ontario and in the north in particular, I think in total, in all of my riding for example, all you can get is Ontario Hydro service. There are no municipal utilities.

In much of the riding, it is not possible to convert to any other form of fuel for heating, for example, other than oil. I guess that would be the example. In those areas, it obviously increases the cost of living when you cannot have a choice of natural gas or an alternative fuel. Has Hydro looked at how the rates affect those kinds of customers?

Mr. Conway: Some of our customers in the experiment are in the north. Incidentally, the northern customers in the experiment are a little bit more enthusiastic than the average customer in the experiment about this whole thing. That was, again, a surprise.

Because electricity costs a little bit more in rural areas, they seem to be that much more interested in anything available to reduce their costs. Even though there are more electric heating customers in the rural system, they seem to be quite enthusiastic about this new rate structure. As I say, once again there are some kinds of confusing information coming back, but it seems to be mostly positive. There are a lot more water heaters in the rural as well, and I think that represents a special advantage to them in terms of adapting to this new rate structure. I suspect that they are going to be better off, once they do some thinking about what is going on.

We will be doing an optional proposal, so again, if they do not like it, they do not have to do it.

Mr. Matrundola: I would like to ask a question about the rates. I understand that Hydro charges the same rate summer, winter, night or day. What is the saving in producing hydro in wintertime vis-à-vis summertime, for example?

Mr. Conway: The rate structure is about 30 per cent more expensive in the wintertime. The cost is actually more than that. It is probably in excess of 50 per cent more.

Mr. Matrundola: To produce energy in the wintertime?

Mr. Conway: That is right.

Mr. Matrundola: But the rate that you charge the customer is always the same?

Mr. Conway: Right now it is, but with the new rate structure, it will be higher in the winter by some 30 per cent. One of the reasons we did not go all the way is because we know that there a sort of mounting peak in the summertime, and we did not want to overshoot, so we did back off the difference, if any.

Mr. Matrundola: I understand it is less costly to operate an industry during the night than during the day as far as the energy is concerned.

Mr. Conway: Yes.

Mr. Matrundola: What is the saving? Take two industries, two companies that are operating. One is operating eight hours in the day and the other operates eight hours during the night. What would be the saving in energy?

Mr. Conway: It could be pretty substantial. The difference is three to one, so it could be as much as 60 per cent if it was an extreme case of total peak moving to total off-peak. Most companies will not do that though. Most of our very large customers already have a fairly flat load curve, and they are not just eight hours; they are 16 or 20. They will just move pieces of their operation, the pieces that are most amenable to movement, instead of the whole operation.

Mr. Matrundola: Obviously, they cannot all do it, because you have to take into consideration other costs such as labour, management and so forth. Very well, thank you.

Mr. Conway: That is right, exactly.

Mr. Chairman: We can move on to the next subject which is financial incentives. Mr. McConnell, are there going to be two people presenting this portion?

Mr. McConnell: All of the financial incentives will be presented by Dave Comissiong. He will also be presenting papers 3.10 and 3.11. I do

not know when you desire to break for your discussion.

Mr. Chairman: I think we should break for questions after he has presented his paper on financial incentives.

Mr. McConnell: Yes, because it is fairly long.

Mr. Chairman: It will be fairly long and a logical break in the subject matter. So if we could go through those four items under financial incentives and then break for questions.

Mr. McConnell: That will be fine.

Mr. Comissiong: The topic is financial incentives for demand management. I want to impress the importance of this topic when we consider that we are relying on financial incentives to deliver approximately 2,000 megawatts of demand management for us to the year 2,000.

As I stated earlier, natural conservation can be influenced by promotion, education and proactively interfacing with the customer. We are relying on financial incentives to provide that portion that we have identified as strategic conservation. To that end, we realize that we will require financial incentives to basically offset the costs of energy efficiency improvements. In doing that, we have to address some of the barriers to the customers' acceptance and their active participation in these areas.

I am going to be dealing basically with four strategic elements or guiding principles, however you wish to view them. In the course of viewing them I want to deal with each one and raise some of the issues, concerns and barriers that may exist towards the implementation of those basic elements.

Before that, dealing with some of the guidelines in designing the principles, it is important that we address all of the operational aspects so that we can effectively implement financial incentive. We are talking about a major financial investment in terms of the type of financial contribution here. Ontario Hydro has very carefully watched the experience with utilities to the south of us in the United States. We have an opportunity to learn from their experiences. We also have a requirement to avoid some of the pitfalls they have experienced in the implementation of financial incentives.

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Dealing with the first strategic element, incentives should be high enough to encourage the development of a large part of the potential that is beneficial to customers in total. What we are really saying is that we want to reach the

optimum level of electrical efficiency and make sure financial incentives are high enough to address some of the barriers that exist in this area.

Certainly there is a financial barrier. We must appreciate that the customer's financial resources are limited and that most businesses and home owners have competing projects for the funding. For example, the residential customer may value a winter Caribbean holiday more than a contribution to a thermal envelope or high-efficiency devices in the house. Those are matters of personal choice. You are competing with that and it is very important you realize that when you are dealing in this type of environment.

We have to relate to the total cost of running a business or a home. We have to realize that the electrical portion of that is quite small, so it does not get the profile some other aspects do in terms of running those businesses. For example, shutting down an assembly line for a period of time to make those electrical or efficiency improvements may be more costly to the businesses in some cases than just carrying on and running the business without making the improvements. We have to address some of those issues for them.

Certainly customers require a shorter payback for any investment they make in efficiency than the utility normally requires. For example, Ontario Hydro plans its capital investments over 40 years. I do not think too many of us sitting in this room look at that type of payback period. In fact, most businesses would look at a 10-year range. In most cases, such issues as simple three-year payback would be more appropriate. Those are things we have to be aware of.

The nonfinancial barriers are quite evident. The customer who pays the electricity bill may not be the person responsible for the actual energy-using equipment. For example, if you look at a business, the accounting function that pays that bill may not have a direct vested interest as would the building maintenance department; there is not a direct relationship in the marketplace and the opportunity to lever off of that. Apartment tenants have no direct influence or control over how a building is built or in fact do not directly pay for their energy as a separate billing.

Pricing aspects: The marginal cost of increased supply to the utility may be higher than the average accounting cost that is reflected in rates to the customer.

Priority aspects: The customers have different priorities from those of the utility. As individuals, they are sometimes more interested in the

aesthetic aspects, or convenience, or the resale value of particular assets such as their house. They far exceed any efficiency improvements we may be concerned with as a utility. It is our responsibility in dealing with these issues to try to make them aware of it and offer them incentives to move in that direction.

Like all people, customers like the status quo. They feel comfortable with it. It is quite common, for example, that 40-watt fluorescent bulbs are the norm in offices and commercial structures, whereas a 34-watt energy-saving bulb will save up to 15 per cent of the energy consumption and at the same time offer a longer bulb life and give a payback of less than a year. Yet the customers generally are not responding to that in the marketplace with the exception of major government buildings.

Moving on to the second element, customers who participate and receive the direct benefit should provide a substantial contribution to the cost. Our commitment here is that customers who participate in the program do not make a significant contribution to the equipment or system to be installed on their premises, and they will not develop an ownership or a commitment to that particular option. It is important that the customer make some type of financial commitment. The United States experience has certainly emphasized that.

In terms of assessing the economies of the demand-management option against the supply option, it is very important to remember that the supply option is a revenue-producing asset for the utility, and the demand management option is an energy-saving asset for the customer. The point I really want to stress is that demand management costs revenue dollars up front. We are making a financial commitment up front for that for a long-term saving.

There is an issue of equity, and it is only fair that the participating customers who receive a long-term benefit, in terms of the benefit from the contribution, in fact, contribute to the cost of that energy-efficiency improvement. Those who get the benefit, in fact, should in some way pay for the benefit.

Experience: A full grant should not be required to encourage that cost-effective option. For example, experience with other government programs such as the Canadian home insulation program and Canada oil substitution program have demonstrated that a partial contribution may be sufficient to motivate the customer. We have to deal with the right level of incentive in terms of promoting the activity.

If you are not careful, certain distortions may occur in the marketplace. For example, if incentives are too high or inappropriately applied, you could have some problems. If a large incentive, for example, were applied to R-2000 construction in new housing, going back to my earlier comment about the 10,000 homes, we could in fact be encouraging people to move to an all-electric option when there is natural gas available in their area. The question is, what is the pivotal point, the magic point, at which we provide just enough incentive and yet not too much to move the market beyond where we want it?

Dealing with the third element, the level of incentive should be acceptable to the customers in general. There is an issue here in terms of rate impact. In setting the incentive levels, Hydro must balance the conflicting objectives of encouraging electrical efficiency improvements with avoiding significant inequities through rate increases to all customers, including those who could not participate in the program. What I am trying to get at is the fact that we have to find the balance so that there is equity in terms of the customers.

If total benefits to Ontario Hydro, the utilities and customers exceed total costs, society in total should be better off. This goes back to the societal test. This test is less restrictive than the no-losers test which the select committee on energy recommended against in 1986. What we are really saying here is that when the total benefits to Ontario Hydro, the utility and the customers exceeds the total cost, society will in fact be better off.

The programs are now being screened to pass this societal test. Screening and evaluation, however, have not been the norm in North America in the early years of demand management. We are really developing new areas here in terms of how we deal with the incentive issue.

Of course, there is the consideration of customer groups, such as the Association of Major Power Consumers in Ontario, the Municipal Electrical Association and Energy Probe, who are very interested to make sure that their customers are treated fairly in terms of how the incentives are applied. They, in turn, make annual representations and so on to the Ontario Energy Board on behalf of their customers.

Then there is the consideration of the free rider. If incentives are taken up by customers who would have, on their own, implemented energy efficiency improvements, then the added cost of this activity would be borne by all other

customers in the form of higher rates. The question then is, we must try, in our implementation of incentives, to somehow minimize the free-rider impact.

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The fourth aspect is that financial incentives should be based on lifetime benefits. Loans and grants may be used to increase returns to customers in the early years. Although the customers and the utilities will benefit over the lifetime of the demand option, the financial attractiveness can be increased if the incentives are available in the early years. Although the advantage to the system is spread over a number of years, what we are basically doing is bringing forward that benefit in the early years, to make it attractive to the customer.

We have to be concerned with life-cycle costs. Demand options are being evaluated to ensure that their life-cycle costs are less expensive than the life-cycle costs of the supply-side options. This allows again for us to front-end load those incentives to overcome customer reluctance in terms of spending capital.

Then there is an issue of durability. Hydro has established monitoring systems. The essence of making sure that incentives in fact work is to make sure we have proper evaluation and monitoring mechanisms in place when we implement. We have to measure the specific results of those incentive programs. At the present time, we do this through field reporting of the megawatts achieved, estimates of the system impact and using audit trails to follow up on those implementations.

Let's take a look at a few guidelines for designing incentives. As I said, monitoring results is very important. We have to monitor the relationship between the incentives paid out and results achieved rather than the results forecasted or projected. There has to be a direct correlation between what we gave out in incentive and what we got for it. If we do this, we will avoid some of the pitfalls experienced in the US utilities, in terms of ineffective program implementations.

Sunset clauses are fundamental to the effective implementation of financial incentives. What do I mean by a sunset clause? I guess we can all relate to it as consumers and shoppers, basically a limited-time offer. What that allows you to do, if you are designing the incentive, is have a natural cutoff point, so if you have a problem with it you can try another attack and have an opportunity to extend it if it has been effective. At least there is something built into the program that allows you to evaluate it and make whatever modifications

may be required. Maybe you have not put enough incentive dollars into it and you are not getting the pickup. Maybe you feel it is too rich, based on your responses and that, so you want to cut it back. That is the advantage a sunset clause allows you. It is very important in the early stages of incentive implementation.

Using the existing infrastructure, again, Ontario Hydro has developed the EnerMark loan plan for energy improvements for the residential market and the EnerMark business finance plan for the commercial, industrial and agricultural sectors. The point I make is that in the residential sector it is actually the contractors who introduce it to the customers, with our support through promotional activities. But the contractors are the direct interface with the customer in introducing the EnerMark loan plan. In the commercial and industrial sector, it is more likely to be the local regional person through the utility or through a utility person making that introduction of the EnerMark business finance plan.

Both of these plans are basically administered by major chartered banks, since Ontario Hydro is not in the lending business. As a result, we leave that function to people who are best able to do it.

I also want to stress the fact that incentives can take different forms. They can be everything from a direct cash payout to promote an activity or purchase, low-interest loans, forgivable loans, or it can be involved in leasing activities. The type of incentive activity you would use would vary by the type of market you are in or the program element you are involved in. Each aspect of that would be decided by what the particular market dynamics are.

It is very important also to decide where to put that incentive. It does not necessarily always have to go to the end user. It may be more effectively applied to the manufacturer or to the distributor or to the contractor, depending again on the type of product, the part of the channel and what type of activity you are trying to stimulate.

In terms of the broadness of the coverage of incentive activity, it is important that we have a range. I refer to it as a menu approach. Think of yourself in a restaurant and you are looking at your menu. You have a number of items listed there as your entrées, and it is your opportunity as a customer to pick and choose off that menu what you want.

By providing this menu approach, we will offer to the customers the opportunity to make the best choice for their particular type of application, and this is fundamental to the effective implementation of incentives. In this

way, we will successfully enhance customer satisfaction with the use of incentives.

That is basically what I had to say in terms of financial incentives for demand management. I will take any questions.

Mrs. Grier: One of the principles that I think ought to be included in that is the whole issue of simplicity and lack of bureaucracy. If the client is going to have to have four inspectors and five appointments and 10 forms before he participates in the program, he is going to say, "Forget it." I am wondering, is that a totally unrealistic expectation?

Mr. Comissiong: No. In fact, that is one of the fundamental principles, although unstated here—so fundamental we did not state it.

Mrs. Grier: I am glad you consider it that fundamental.

Mr. Comissiong: To give you an example of how we have already implemented that principle, in the early days of the EnerMark loan plan and its predecessor, we attempted to basically administer it ourselves and use our own systems internally and the process to get approval for the loans dragged on and on. We did not exactly have a high level of customer satisfaction.

It was our attempt to maintain simplicity that brought us to the conclusion that we should pass that function on to the chartered banks and let them do it. They are in the lending business, they know how to process loans quickly, and they do not have the level of bureaucracy for that type of function that we have.

The same type of principles applies here. We will do what we do best and we will let the private sector do what it does best, and it has the systems in place to keep it simple.

There is also in the balance of that a need to make sure that we have accurate and yet effective monitoring systems in place that allow for the feedback mechanisms, because we are really talking significant financial dollars here.

Mr. Charlton: During the course of your presentation, you raised the potential problem of distortions, and I think it is an appropriate and useful thing to try to deal with. When you used the example of potential distortions where you basically said, "Look, if we gave an incentive which drove too many people to all-electric homes, we may have a distorted impact on the system," that is very true. I certainly agree that we do not want to be putting in place incentives that are going to lead people in the wrong direction.

But, for example, just using the housing example, is it not fair to say that Ontario Hydro should not be looking at an incentive for R-2000 all-electric homes, what it should be perhaps looking at is an incentive in new housing that is attached to the energy efficiency of the house in general, so that in fact the incentive can apply across the board and not necessarily drive people in the wrong direction?

The gas house that you were referring to in that example may have a gas furnace in it, but that same house is also likely to have some kind of air-conditioning for the summer period. As you have said, the summer peak and the winter peak are approaching each other as the gap narrows and there is a benefit—perhaps a lesser one, but a benefit—in having that gas house energy-efficient as well.

Mr. Comissiong: I guess in principle I do not disagree with you. Our fundamental focus here is that we are talking about the basic construction of the house, and if you do not get that R-2000 construction with its thermal envelope and all the other aspects of it in the construction stage, it is on your system basically for 40 years, because in the early stages of the house people are not going to rip it apart and rebuild it to an energy-efficient standard. There is a need to hit the house, as I say, at that construction stage and make sure it is built with energy-efficient standards.

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Mr. Charlton: That is exactly what I am suggesting. If you are going to get into incentives in that area at all, the incentives should be attached to the energy efficiency of the house itself, not to the type of fuel used in the house.

Mr. Comissiong: I would expect that the other aspect of the energy option would be something the Ministry of Energy would want to target, along with, say, the gas company, in terms of making the best use of their fuel. Hydro's initial concerns are in terms of electrical consumption and how we can best manage it.

Mr. Charlton: As I suggested, though, whether a house has a gas furnace or not, there is an energy saving in electrical terms for Ontario Hydro in both the gas house and the all-electric house.

Mr. MacCarthy: If I can comment on it, it would seem to me more appropriate in that situation to look at the other applications within the home—the air-conditioner, the refrigerator—and to provide incentives or standards of efficiency in that area, to achieve the efficiency

levels we are striving for in the areas where electricity is used.

Personally, I have some concerns about broadening, so that we are then proceeding with energy-efficiency standards on the wide basis even if electricity is not used in the house at all. It seems to me you should focus your effort, pay the minimum you need to get the job done, keep the electricity rates as low as possible but still achieve your objective.

Mr. Charlton: I do not disagree with that. All I am suggesting is that certainly incentives around the individual uses in the house may or may not be appropriate, and that should obviously be looked at. But ultimately, as was suggested a few moments ago, once the house is built, it is going to be on the system in some form for a minimum of 40 years, likely closer to 100, and any incentive we can put in place to make that house shell energy-efficient is going to have some impact on the electrical system in terms of reducing demand. Incentives obviously have to be geared to the savings; I understand that.

Mr. MacCarthy: There is a cost associated with the incentives.

Mr. Charlton: All I was trying to get at is that the incentives should not be tied to the electric heating of a house. That is liable to drive people in the wrong direction.

Mr. MacCarthy: It seems to me it should be tied to the electrical application, so you provide an incentive to have the most efficient electrical application.

Mr. Charlton: Again, if we get into the full discussion of the whole picture—you have talked at length all through these hearings about fuel costs and the impact they have on your system—the more energy-efficient this society is in general, the more your fuel costs will be reduced.

Mr. MacCarthy: I am certainly not against an energy-efficient society in Ontario. That is our whole thrust.

Mr. Charlton: All I am saying is that energy efficiency as a whole has an economic benefit for Ontario. It also has a direct benefit to Ontario Hydro, either through electrical consumption or fuel costs or any number of other ways you want to look at it. All of those things have to be taken into account when you approach the question of energy use.

Mr. MacCarthy: I agree that they should all be taken into account. I am not agreeing that Ontario Hydro should pay for all energy-efficiency incentives in the province.

Mr. Charlton: I did not suggest that, either. For example, if you are giving out incentives for housing, if you decide to get into that at all—and I do not think you have absolutely decided you are going to do that, but it was suggested as an example and that is why I raised it—then perhaps Ontario Hydro should put up the full incentive on a house that is totally electric and perhaps the ministry and, as you suggested, the gas companies in this province should be looking at joining Hydro for an incentive on houses that are gas-fired and so on.

That is fair; I understand that. Hydro's incentive should be tied as closely as possible to the electrical energy savings, but we should not be avoiding incentives because there is a smaller electrical saving over here than there was over here. If it is still substantial, it is worth going after, if it is economic.

Mr. McConnell: I think the specific strategy element that this was referring to, having to do with distortions, had to do with Ontario Hydro being very careful that we did not have incentives that motivated decisions to be made that should not be made.

There are many homes in Ontario in which gas and electricity are alternatives and in which gas is a cheaper way to do the heating at the present time. We would not want to be placed in a situation, because there are many homes without air-conditioners, where we had created incentives that in fact induced people to shift from gas to electric. That would be inappropriate. That would be a distortion.

Mr. Charlton: I agree.

Mr. McConnell: Basically, I accept the spirit of the comment that you are making that we are all mutually interested in energy efficiency, of which electricity is one component. But, as Mr. MacCarthy has pointed out, if, say, in that particular field we represent 25 per cent of the total action, it would not be a fairness issue to dump on the electrical ratepayer all of the costs associated with the gas heating.

Mr. Charlton: I also agree. I just did not want to see the choices being either/or.

Mr. McConnell: I think you must accept the principle that we are trying to avoid distortions and that this is also a contributing factor in terms of wanting some sharing of costs between the utility financial incentives and the contribution for the improvement on the part of the customer.

Mrs. Sullivan: There are a couple of issues, one of which is a little more esoteric, I suppose, than others. It seems to me that from a social

standpoint there may in fact be reasons for people to participate in a demand management program that relate other than to energy efficiency, including the cost of operating later on.

I wonder if Hydro has taken into account, in its design of demand management incentives, the ability of, by example, people from the lower-income scales, young new home buyers and the small business community to participate in the sorts of incentives that may be designed as we move further and further. I think the social impacts are perhaps as much a rationale for participation as the argumentation about energy efficiency.

Mr. MacCarthy: I am not sure I fully understand your question. Are you suggesting that people in lower-income groups or commercial enterprises in their initial startup phases may not be able to afford as much, even with an incentive?

Mrs. Sullivan: They would not be able to take equivalent advantage of an incentive program as, by example, a middle-income or upper-income owner or business that has been established in a community, or even a large business.

Mr. MacCarthy: We have not specifically addressed that issue in the demand management initiatives, other than that there is the basic principle of what it costs—economic demand management initiatives.

I think you get into the broad question of what is the role of Ontario Hydro and what is the role of government in this area. We are not arguing against providing some assistance to a company that is in a startup position. It is a question of whether that is an appropriate role for Ontario Hydro to take.

Mrs. Sullivan: In many other areas we see Hydro taking into account the social and economic value. There is a portion in your planning strategy relating to a social value. It is clear that in many areas we are seeing Hydro as both an economic and social planner in terms of the way construction is brought on stream and the economic impact on neighbourhoods and so on. To me, it is valid that somebody who is in an income level lower than middle income should have an equivalent advantage of the incentives. That should be part of the factoring that Hydro takes into account in designing the incentive programs.

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Mr. McConnell: Maybe I could add something to your observations. We have indicated in our strategy statements that we would not

propose to introduce a demand-management efficiency improvement program in which we exceeded the societal test. That is to say that every one of these applications has to have economic merit on its own. In other words, there would be no subsidization of our customers in total. For those people who are less well-to-do, it may be a barrier. Because they are less well-to-do, they may not be prepared to make that initial capital investment in order to make that net efficient thing happen.

Our programs are designed to overcome that barrier to help those people who are not able to make that front-end investment. That is taken into account in some of the programs, but we are not in the process of acting to transfer moneys from the rich to the poor. That is not fundamental to this program. If that is to be done, that is an appropriate role of the government and the Legislature.

Mr. Charlton: We can take care of that.

Mrs. Sullivan: That is right, which leads me to my next question. Regarding the sorts of legislation Hydro might want to seek in terms of incentives for demand management, one of them may well be some kind of direct grant capability; I do not know. Your notes today are fairly sceptical of that, but that may well be one you might look at. Another one might be relating to increasing efficiency standards for manufacturing equipment, appliances and so on. We have had one bill as a kind of introduction in that area. Is Hydro actively pursuing legislation recommendations?

Mr. MacCarthy: We have had a number of discussions with the Ministry of Energy in this whole area in terms of standards that might be introduced. I know there are legislative standards forthcoming in the United States which are adopting higher efficiency standards. We are looking very closely at that and I know the Ministry of Energy is also looking at that for possible introduction into Ontario.

The whole issue of imposing a standard versus encouraging a standard is not a simple one. We have had some experience in this area ourselves. A few years ago we were prepared to provide an incentive for a particular standard of equipment. We introduced it and we provided the incentive only for that particular standard. We had a fairly outraged manufacturers' group saying: "This is great stuff, but I have 1,200 of the other on my inventory level. You are providing a bonus in this area."

These are issues we have to address, but those can be addressed by a phase-in process. There are

ongoing discussions in a whole range of areas: industrial, commercial and residential.

Mrs. Sullivan: My next question or comment, I suppose goes back to the previous chapter but relates to the standards of appliances. After some 25 years of marriage, in the past three months I have replaced my freezer and my stove. There were sticky things on the front that talked about the energy efficiency of those products that were impossible to get off, and somebody should do something about that. But as well, I do not think they were understandable to the average consumer, and I wonder if that is being taken into account in the education and promotion areas.

Mr. MacCarthy: We have a number of information booklets that go out which talk about this whole area, but I can appreciate and understand your comment that some of these things are not that clear. We are trying to address that. In fact, I made a commitment the other day and I will provide it with some information booklets on appliance stock and some advice on purchases and some ways to look at it. There is more to be done, mind you.

Mr. Runciman: I just have a follow-up to what Mr. Charlton was talking about. In your earlier submission I think you mentioned something like 10,000 electrically heated homes that are going to be constructed this year in Ontario. What has been the trend in the past five or 10 years in terms of market share of these electrically heated homes? Is your share of the market increasing on an annual basis?

Mr. Comissiong: I believe it is relatively flat. Hedley, you would probably be better to reply.

Mr. Palmer: Yes. I think that is correct. Over 20 years or so the penetration of electric heating in the residential market has been essentially flat. It may go up and down from year to year, but the percentage has remained about the same.

Mr. Runciman: Do you view that as desirable? You have indicated to us that market share is not a real concern; certainly residential market share is not a real concern.

Mr. Palmer: We do believe very fervently in customer choice. The customer chooses all the things that he wants to spend his money on, for whatever reasons he spends his money. If he prefers, in the electrical field, to heat his house electrically, we think that is a choice that he should have, and society or Ontario Hydro should not interfere with that choice.

Mr. Runciman: I share Mr. Charlton's concern with respect to the incentives approach, in that I have difficulty with Mr. McConnell's

suggestion that Ontario Hydro is assuming the responsibility for all energy modes, but I think it is something we can be discussing when we deliberate our report, the concept that it is a role for the government to play rather than a public utility. I would certainly like to see us discuss that at length, whenever the time arrives.

Mr. Brown: I would like to return to Mrs. Sullivan's question about the societal values for a minute. It seems to me that inherent in Ontario Hydro's mandate to provide power at cost, there is automatically a societal value attached. If this is a free capitalistic venture and not monopolistic, the easiest way to control demand would be just to raise the price.

Obviously, we have chosen not to do that in this province. With every incentive there is a penalty on the other side. Somebody pays for the incentive if everything is at cost. I just wanted to make the comment that it seems to me that there are societal values that, by your very mandate, you are required to take into account.

Mr. McConnell: That is correct and that is in the Power Corporation Act at the present time.

Mr. Chairman: Perhaps, Mr. Comissiong, you could proceed with the second part of your presentation.

Mr. Comissiong: My second part deals with the strategic element that Ontario Hydro work with government, industry and customers towards developing standards for buildings, appliances, etc., that are widely accepted. As a result of the discussion between Mrs. Sullivan and Mr. MacCarthy, I think this will be a rather short presentation.

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Fundamental to this is that Ontario Hydro enthusiastically supports the Energy Efficiency Act. Hydro has always had a strong and active support for standards, in terms of product development; testing and research, working with the Canadian Electrical Association; serving on various federal government steering committees on the EnerGuide program, those labels to which Mrs. Sullivan previously referred.

We have also been involved in the advisory committee for the implementation of the Energy Efficiency Act, working with the Ministry of Energy. We continue to provide evidence of improper labelling or nonlabelling, as a result of our inspection activities with our electrical inspectors. We continue also to run tests in terms of evaluating new high-efficiency appliances through our research efforts.

A fundamental belief at Hydro is the value of the consensus approach, to make sure that, as I referred to earlier, all of the stakeholders who have basically a vested interest in the success of energy efficiency are committed and involved in the implementation of these aspects.

However, if and when consensus is not available and a stand has to be taken, then the opportunity is there for mandatory standards and regulatory aspects. That will provide a high degree of penetration but, at the same time, the most effective way is to make sure that the people who have a vested interest in it in fact agree with it.

Analysis has shown the benefits for these stakeholders in terms of the appliance and equipment field to the manufacturers. Many of them have agreed in terms of looking at various performance levels. However, it is a complicated issue for the manufacturers. In many cases, it involves new research and development, retooling, changing production processes. It has major capital implications for them. In many cases, things may be outside their control, in the sense that they may be part of multinationals in which the R and D comes from outside Canada, so they may not have every opportunity.

It is a long process to work on a consensus, and it will take probably to the year 2000, based on our present forecast, to appreciate a 100-megawatt load reduction as a result of the standards now.

However, we feel it is important that we co-ordinate with the customer programs and that we give out information and literature. We have a number of papers in this area that talk about the electrical consumption of appliances and various pieces of equipment and provide customers with the information so that they, in turn, can make intelligent buying decisions when they enter the retail store. We hope that our future labels will come off better than the ones Mrs. Sullivan referred to earlier. It is part of customer satisfaction.

We are also interested in being part of discussions in updating the Ontario Building Code in the document Measures for Energy Conservation in Buildings. Hydro has co-operated with the Ministry of Energy and with the Ministry of Natural Resources in this effort.

Are there questions on this topic?

Mr. Richmond: Mr. Comissiong, I do not believe you were present at the last select committee hearings. I recall distinctly—and it was quite shocking, I think, to some of the members—at the last select committee, evidence

was presented which indicated that some of the large discount retailers of appliances were not too keen and were quite averse to any intrusion in this appliance energy-efficiency area.

I am curious. In the intervening two or three years, has Hydro got any feel or has it worked with any of the large discount retailers so that they carry and promote equitably—realizing they should not promote General Electric compared to Westinghouse—that their stores are carrying energy-efficient appliances?

Mr. MacCarthy: Mr. Comissiong has had discussions with a number of these people. Perhaps he could comment.

Mr. Comissiong: In the process of working with the Ministry of Energy on the Energy Efficiency Act, a number of meetings were held with the chief executive officers of the major appliance manufacturers. What came out of those discussions was a commitment on their behalf to improving appliance efficiencies, certainly, and also their business concerns.

Their business concerns relate to the fact that the three major manufacturers in Canada are part of multinational operations. There is an impact to them in the future in free trade as to what their roles will be in the broader multinational conglomerate. With the pressure of American standards facing them by 1990, there is a great deal of awareness and acceptance by them that they will produce a higher energy-efficient product in the future.

At the same time, I would like to explain some market dynamics, going back to Mrs. Sullivan's point about having replaced her refrigerator after 25 years. The refrigerator you replaced, I expect, is probably bigger than the one you had. It is probably frost-free—if the other one was not; I am guessing by the age of the unit—which in turn offers you a great deal more convenience, but the old refrigerator may have been more energy-efficient because it did not have those added features.

The point is that in terms of the newer models, there is a need to make sure that additional inflations are built in, that the most efficient compressors and motors are used, based on today's consumer demands. Those are the things we really have to evaluate, because the customers really do demand certain benefits and aesthetic values in the products they buy and we do not have the opportunity to just eliminate those.

Mr. Richmond: Do you have any knowledge, though, of the current response of the large retailers to promoting at their level? I realize the

manufacturers are going to get in line but, as I say, the evidence we heard a few years ago was that the large retailers were not really interested.

Mr. Comissiong: I go, for all of these, with my own experience and I have had about 15 years' experience in the appliance business, so I have an association with the retailers and the manufacturers. Most retailers in this province are very reputable in the sense that they basically sell the customer what they want in terms of what the customer demands in value. To that end it is the lack of customer awareness, or feeling of importance for, the energy-efficient aspect of the appliances they are buying that restricts their activity at the retail level.

Analysis has indicated that probably no more than five per cent of consumers actually paid any attention to the EnerGuide labelling. Part of that may have been the fact that it was not effective, did not tell the customers what they needed to know and other considerations like that. At the same time, the customer is going in to buy, in the case of a refrigerator, the size, the convenience, which are more important values to him; those are what the retailer will lever off of in terms of making the sale. On the other side of it, 95 per cent of the product they sell comes from those three manufacturers, so they basically sell what is available.

Mr. McConnell: Mr. Chairman, do you wish us to complete the two presentations before the discussion?

Mr. Chairman: I think we may have completed the discussion on this subject. Have we? I think we have, so we could proceed with the second part of the presentation.

Mr. Comissiong: This gentleman over here has a question.

Mr. South: Will you indulge me one short question, entirely off from this but dealing with appliances?

Mr. Chairman: Certainly, Mr. South.

Mr. South: Why the heck do they not put handles on the sides of refrigerators so you can lift them? They have got to be the most awkward things to move in and out of houses that were ever imagined.

Mr. Chairman: That is an energy consumption item, yes.

Mr. Comissiong: One of the preferred customer features on a refrigerator is wheels. You can get them as an add-on. If you just open the door and pull underneath the bulwark, it will move fairly easily, or much easier than trying to arm-wrestle it.

Mr. Chairman: Thank you, Mr. South. Mr. Comissiong?

Mr. Comissiong: Dealing with strategy element 3.11: "Ontario Hydro will identify other barriers to increased efficiency and work with other parties as is appropriate towards a reduction or elimination of such barriers." I guess there is a very interesting area. One of the most interesting aspects of other barriers is discovering exactly what they are. You do not find that out until you get out there in the marketplace and get some real world experience.

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The best example we have had of that recently in terms of the importance of market research prior to broad-brushing and broad-basing programs across the province is the experience we had with the Guelph high-efficiency motor test. That experiment or piece of market research, which was conducted by Mr. Palmer's group, demonstrated to us that there was a lot we did not know beyond what we thought we did.

Certainly, we were having difficulty reaching the key decision-makers. We found out that the person who makes the buying decision for motors may vary on the type of business, the size, the site, whatever it may be. You just do not know from one location to the next exactly who is directly involved in that decision-making process, and it is very difficult to identify them.

The delivery channel was difficult to fully access, basically because of the number of players involved. As I said earlier, you are working with manufacturers, distributors, utilities and users. Who are you trying to influence in the process of looking at that? Whom do you want to influence in terms of getting involved in how they go about doing their business?

Generally, there is great difficulty in tracking awareness in the test areas. Basically, that goes back to the difficulty of finding out who exactly is responsible for the buying decision and, by identifying that individual, being able to follow up and discuss with that person why he decided what he did.

There is difficulty in setting the appropriate incentive levels. What is enough without giving too much in terms of, in this particular case, high-efficiency motors? Initially, we experimented with \$10 per horsepower. That was based on some preliminary evaluations we had done. We found in some cases, in the higher-capacity motors, the larger-sized motors, that was enough, but in some of the smaller-sized motors, it was not sufficient to move people in that direction.

There are basic product availability problems. We found in some cases the product was readily available and in other cases there was up to an eight-week lead time before the product was available. If you are talking in terms of retrofitting a production process, many manufacturers, particularly small businesses, just do not plan that far ahead and do not have eight weeks to wait for delivery of their product.

There can also be institutional barriers in terms of tax treatment of incentives in the business community and in terms of traditional accounting principles as to how they are handled in the companies. I guess the fundamental issue, which Mrs. Sullivan was referring to earlier, is the fact that the Power Corporation Act as it is currently written does not specifically allow for payment of cash incentives to customers.

There is the issue of the economic infrastructure, basically all the market dynamics that go in, product availability issues, the technical transfer aspects and product warranty restrictions. For instance, in some cases, retrofitting certain types of equipment on other equipment may void the manufacturer's warranty. So there are things like that which have to be dealt with. Basically, you have to look at all of these things and try to overcome them one by one as you are developing programs and implementing them in the marketplace.

Mrs. Sullivan: I am quite interested in the Guelph test. I wonder with that test why the design of the test was done on a geographic basis rather than on a sectoral basis. For example, why did Hydro not approach, say, the machinery equipment manufacturers of Canada, that association, and work with them in terms of the design of the test, knowing they would have access to the manufacturers, the distributors and the end users? Some of the problems in terms of that test design may have been avoided, including the fact that the distributors were outside of the test area, and the actual equipment that was being used in the test, the availability of that equipment, could have been better controlled perhaps.

Mr. Chairman: Mr. Palmer, would you like to respond?

Mr. Palmer: Our tests in the direction in which it was constructed arose because some of our initial market research showed there was a very large number of motors purchased by customers in industry and commerce through their contractors, through their distributors and so on as motors for application on some equipment that they purchased without motors or in the replacement market for motors. So we

decided we would first try to test how customers reacted to incentives and so on.

I think I outlined a bit the other day and Mr. Comissiong has outlined today some of the barriers we have encountered. We did decide part-way along that we should look at some other avenues as well, and I did note that one of the avenues we decided to explore was that if there was a new business or if an expansion of an industry or a new industry would come along in the test area, we would make a direct contact with the people who were buying equipment.

We had extensive discussion, for instance, with General Motors and Suzuki and they decided on the basis of the incentives we were offering that they would go to the suppliers of their machines and to the extent that it was practical and possible buy high-efficiency motors. They bought roughly 85 per cent of the motors in the new plant as high-efficiency motors. The other 15 per cent represented motors that are of some special nature for which the manufacturers had no ready-made, high-efficiency motors that would fit that application.

We have not yet, and it is a new idea for us at this point that we should go one step further and work with the machinery manufacturers to bring pressure up. By the way, the electrical manufacturers readily produce these motors. They have designs and they can be purchased from them. It is just that the volume of business generally is so low that they do not produce a lot of stock ahead that can be readily drawn from, nor do they encourage their distributors to stock high-efficiency motors for the same reason, because stocking a motor costs the distributor quite a bit of money, in space and in administration, so they want to stock as little as possible. The contractor, in turn, does not know too much about it. He does not go and ask every time he has a customer who wants a motor. He does not think to say to the customer: "Do you want me to buy a high-efficiency motor? If you do, Hydro will pay a grant towards it."

All the way along the line there is an enormous amount of work to do and all I think your question has done, and I am very pleased to have it, is to open up another avenue to look at.

Mrs. Sullivan: Just further to that a bit, in designing the pilot areas for these kinds of studies, would you be working in terms of the design with engineers who would be specifying equipment to be used on a project, whether it is a

capital construction or an ongoing facility, perhaps even recommending it?

Mr. Palmer: Yes, and I would ask you to recall Mr. Comissiong's remark about finding the key decision-makers who are the people who make decisions about it and at what stage the decision is made. That is kind of a key piece in the market research activity, in any kind of test project.

Mrs. Sullivan: I was just very surprised at the Guelph project design in that, with the economic development in Ontario being so dispersed, it seemed to me that a geographic approach would be almost an invalid test from the beginning.

Mr. Palmer: I think I would have to dispute that. It is quite a common practice. Even if you want to sell toothpaste, it is an in thing to choose a small test market in some community.

Mrs. Sullivan: I do not disagree with that in terms of some products, particularly retail products or products with a broad customer base. There is extraordinary validity, and entire companies have been built and users' patterns changed as a result of those test marketing programs, but you are testing something that is quite different.

Mr. Palmer: I think so. We get advice from people who presume to be experts in this field on how to approach most of our test markets. Let me tell you that in a test market you need to train people; in our own staff, you need to train electrical contractors and so on. If you look at one segment of the market all over the province, it increases the cost of the operation tremendously; so you want to contain the cost to the maximum extent. One way to do that is to have a sufficiently large, but none the less restricted geographic area so as to reduce all those sequences of costs that I have identified.

Mr. Chairman: Any further questions? That being the case, as it is now afternoon, I will adjourn the committee until 1:30.

Mrs. Grier: Mr. Chairman, do we still have to serve detention from 1:30 to 2?

Mr. Chairman: Given the depth of the material to be dealt with this afternoon, as a self-defence mechanism, we might start at least with the extended-hours format and see how far we get.

The committee recessed at 12:03 p.m.

AFTERNOON SITTING

The committee resumed at 1:43 p.m. in room 228.

Mr. Chairman: I call the afternoon session of the committee to order, please. Perhaps everyone could take his seat.

During the break, Mr. Palmer spoke to me about last Friday's energy consumption difficulties and the results of a survey Ontario Hydro has done. It sounded as if it would be interesting for the committee, so, Mr. Palmer, perhaps you might tell the committee a bit about what you did find out as a result of last Friday's telephone survey.

ONTARIO HYDRO

Mr. Palmer: From time to time, when something special happens, our market researchers immediately go out on the streets, so to speak, to find out what the customers are thinking. Friday night was one of those occasions. Some 400 persons throughout Ontario were phoned and were asked a series of questions, the first one being, "Did you know about the public appeal?" Some 82 per cent of the people who were phoned knew about the public appeal. About half of them said they had heard it on the radio and about two out of five said they had got the information through television.

The response to the appeal was quite impressive. Some 72 per cent of the respondents said they had done something or other to reduce their energy consumption. Upon a little further questioning, it appeared that those customers who had central air-conditioning and window air-conditioning were the ones who had responded in the most impressive way.

We have a series of questions that we ask from time to time about reliability and customers' perceptions of reliability on the system. We have results of past surveys. Those same questions were asked on Friday night and the respondents indicated there was about a five per cent drop in customers' impressions of whether the system was reliable and would continue to be reliable.

It is interesting. One of these questions is, "What is your perception of what the level of interruptions will be in the 1990s and electricity shortages in the 1990s?" The drop was about seven per cent. These questions are not interesting in themselves, but the next time we go out to inquire, we will be able to see whether the public confidence has moved back up five per cent, if there are no further interruptions, or whether it

will have sort of a permanent set on customer opinion. That is my information.

Mr. MacCarthy: I also included, during the break, a supply of material on energy-efficient appliances, which I think has been circulated to the committee for your information.

Mr. Chairman: That would be this document?

Mr. MacCarthy: That is correct.

Mr. Chairman: All right. Could we then proceed to the next subject area, which is independent generation? There are two areas, rationale and implementation, to be covered here. I think what we will do is hear both presentations and then go to a discussion after that. Could you come forward, Mr. Snelson?

Mr. Snelson: Good afternoon, ladies and gentlemen. First of all, we are now moving on to the next area, which is independent generation, item 4 on this placard. As you can see, we are making progress.

Over the last couple of days, you have heard a lot about demand management and the planning principles that we will be using to pursue demand management. Another area that we are intending to pursue more vigorously is independent generation. Independent generation is electrical generation in Ontario which is owned by customers or private entrepreneurs. Independent generation is also known by a variety of other names, such as parallel generation and nonutility generation, and for these purposes they mean the same.

The independent generator may sell the power to Ontario Hydro or a municipal utility, thereby reducing the amount of electricity which Ontario Hydro must generate. Even if the independent generator uses the electricity himself to meet part of his own electricity requirements, it will still reduce Ontario Hydro's load, because without his own generation he would have bought more from Ontario Hydro. In both cases, the need for our generation is reduced. Our strategy permits us to encourage both types, and we are encouraging both types.

We have four strategic statements that deal with independent generation. Before giving a detailed discussion, I will run through the full text of these principles so that you get the broad picture before we get into the detail.

The first principle says rates for purchasing power from independent generators and incen-

tives for independent generation projects shall be up to the avoided cost to the system as a whole.

The second principle says rates and incentives for independent generation may vary because avoided cost depends on many factors, including the reliability, timing and location of the deliveries.

The third statement is that Ontario Hydro will regularly communicate the need for independent generation to potential independent generators, request proposals to contribute to that need and negotiate detailed terms and conditions with suppliers whose proposals have potential to satisfactorily meet the need.

The last statement deals with the smaller independent generators. Ontario Hydro will establish standard rates for purchase of independent generation having a capacity of five megawatts or less. The standard rates for hydroelectric or other renewable sources will be set at the full avoided cost.

As has been said, I will cover these statements from the planning perspective and Hedley Palmer will deal with them from an implementation point of view.

This all centres on the concept of avoided cost. I will address a number of questions in the area of defining what we mean by avoided cost. I will deal with what avoided cost is, why it might vary from one project to another, why the strategy says "up to the avoided cost" and why we are proposing that the process for large and small generators should be different.

First of all, the basic concept is that avoided cost is the cost that Ontario Hydro would have incurred to provide the same level of service as that of the independent generator. If Ontario Hydro's payments to buy electricity from independent generators equal the costs that are being avoided for increased supply, the total charges to electricity customers will be the same as if Ontario Hydro had pursued the supply option instead. Therefore, it is based on the cost of what Ontario Hydro would have done without the independent generation option.

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For independent generation that provides firm capacity, the avoided cost in the long term will be based on the full cost of building and operating a major new generating plant.

In the short term, Ontario Hydro may not need more generating plant, and independent generation permits the use of existing generation to be reduced. Here the saving is mostly in fuel.

In addition, the independent generation may avoid some transmission costs and may avoid

costs for acid gas control, and these are also components of the avoided cost calculation.

The second point I want to make in here is that, by its very nature, avoided cost is a hypothetical concept and must be used with care. It is based on what Ontario Hydro would have done without the independent generator. If the decision is to go with independent generation, then no decision is required on what to do instead. There can be a number of different speculations as to what the alternative option might have been.

If the calculation does not consider the lowest-cost feasible alternative, then the avoided cost calculation will give an unnecessarily high number. Some US jurisdictions, California in particular, are not recognizing that they have done this. By arbitrarily selecting new oil- and gas-fuelled generation as the alternative, contracts have been signed for very large quantities of high-priced independent generation. They are paying for more than they need and turning down much lower cost hydroelectric energy from Pacific Northwest. On the other hand, underestimating the cost of the alternative may cause independent generation options, that would be economic, to be missed. So it is absolutely crucial that you chose the right alternative when calculating the avoided cost.

What are the factors that cause the avoided cost to vary? When we are evaluating supply options, we look at the specific circumstances surrounding each new generating plant that we might be looking at and we evaluate the effects of that plant, and it does vary from one project to another. The same will be true for independent generation projects.

Avoided cost will vary with location. If an independent generator is in a region where there is a shortage of transmission, then the transmission costs into that area can be reduced by having that independent generator there, and that will be additional value to that particular independent generator. On the other hand, if an independent generator is in an area that has a surplus of generation on a local basis, then additional generation there may merely increase that surplus and in fact increase the transmission costs, rather than reduce them.

You may be familiar with a proposal for some additional cogeneration by a company called Trigen at our Hearn generating station, to supply steam to the railway lands downtown in the city of Toronto, an area that is short of generation. That would tend to have positive transmissions benefits which would reflect in a higher avoided cost.

Avoided cost will vary with the timing of the delivery. For instance, to obtain full credit for avoiding new capacity an independent generator should be available to produce power over the peak periods when we need peak capacity. Also, the fuel savings due to having an independent generator vary through the year.

Additional energy from an independent generator on a cold winter day when Lennox is operating on oil, may save five cents per kilowatt-hour in fuel costs alone. At other times, the avoided cost can be much less. For instance, on a mild spring weekend, the load will be lower, the hydroelectric generation will be at its maximum output and additional generation may be coming only from nuclear plant where the fuel cost and operating cost are one cent per kilowatt-hour or less. So the value of the generation varies according to the time when it is delivered to the system.

Another rather similar consideration—and I will deal with this next—is the dispatchable one; that is, dispatchability has some rather similar sorts of implications. A generation option is dispatchable if it can be controlled by the Ontario Hydro control centre to operate when we need it, when the value is high. Clearly we must have on the system enough dispatchable generation that we can follow the load as it varies through the year, minute by minute, hour by hour, day by day and month by month. We have to have that operating flexibility. The system cannot be operated unless you have that.

In addition, the dispatchers try to use the lowest-cost generation first and the higher-cost generation later. So a dispatchable generator can be used when it is most valuable to the system. That increases the avoided cost and is another factor which can be taken into account in avoided cost calculations.

Reliability is clearly a factor. A delivery that is not very dependable will not have very much impact on our capacity requirements. Another way of putting that is to say a delivery that is unreliable will increase our reserve capacity requirements. The reliability of the delivery will affect the avoided cost.

The last factor is in terms of in-service date for independent generators who would like to come on to the system next year or the year after. Maybe we do not really need new generating capacity beyond what is under construction for five years, possibly not for 10 years, depending on how successful demand management is and so on.

If he comes on to the system early, then that has less value because you are paying for him at times that you do not really need him. If he comes on to the system at a later date which is closer to the system-need date, then that has a higher value and will be reflected in the avoided cost.

Why do we say "up to avoided cost"? The avoided cost concept we believe is appropriate for determining the rates and incentives because it fairly represents the value of the independent generator's electricity to the electricity system. It establishes how much Ontario Hydro can pay before our customers' cost of electricity would increase.

We are proposing to use avoided cost as an upper bound on rates and incentives. Paying above the avoided cost would cause unnecessary rate increases and unnecessary increases in electricity bills. This would not be consistent with our general principle that low customer cost is vital.

However, there are circumstances in which the price should be less than avoided cost. There are independent generators who can produce power below Ontario Hydro's costs. A fair price is something between the independent generator's cost, including a fair return on investment, and Ontario Hydro's savings. Paying up to the avoided cost, somewhere in that range, allows both the electricity customer and the independent generator to share the benefits of independent generation options.

Why are we proposing different processes for large and small? As utilities both here and in the United States become heavily involved in encouraging independent generation, there is becoming an increasing awareness that the processes of negotiating contracts with independent generators must be able to account for the real complexities in determining avoided cost that I have discussed.

We, like many other utilities, are proposing a process where, through a request for proposals and subsequent evaluations, potential independent generators can compete to supply the electricity that is needed. In this process, all these factors will be taken into account. This process will be complex, but it is worth while putting in the effort to get it right for large producers when many millions or hundreds of millions of dollars are involved.

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For the small projects, a process like this would burden them with excessive administration costs and would likely deter worthwhile options. We are therefore using a simplified

process based on standard rates for projects below five megawatts.

The following two slides discuss the two processes.

The process we are proposing for the large producers is a request for proposals or a bidding process. At regular intervals, we will produce a document to communicate the need for increased electricity supply to potential independent generators that will indicate how many megawatts of capacity we need in a given time period. This document will solicit proposals and outline the factors that will be taken into account in evaluating the proposals. The best proposals will then be selected, based on those that will best meet the need for new electricity supply. We will then enter into individual negotiations with those independent generators whose proposals are successful.

Negotiating individual contracts is mutually beneficial. I have discussed how each independent generation project is unique in its impact on the system. We would want to discuss the impacts and negotiate a contract that matches system requirements. If we have a contract that matches system requirements, that will result in the highest avoided cost and the largest payment to the independent generator.

The independent generator may also have reasons for wanting separate negotiations. He may want the financial arrangements to be structured to meet his requirements. He may want a low-cost loan or a repayment schedule that is geared to meet his requirements. He may want a guaranteed rate with some escalation provisions that help him to acquire his financing. So the negotiations help to bring this best match between the independent generator's requirements and the system's requirements. This should result in the best match, the highest avoided cost and the highest payments to the independent generator.

For the small producers, we are proposing a different process. There is a complete range of independent generation possibilities, ranging from a few tens of kilowatts to many hundreds of megawatts. When we consider the small options, there comes a point at which the negotiation and administration costs of a complex bidding process are going to completely overburden the independent generator and become inefficient. The cost of negotiating and administering the contract becomes a large part of the value of the contract.

We do not want to tie small, independent generators to a negotiation process that is

designed for large producers. Their interest may wane and opportunities would be lost. Instead, it is more effective to set standard rates.

We publish standard rates for projects of five megawatts capacity or less. This is an arbitrary cutoff point. It is impossible to point to an exact level and say, "Above this, it should be small, and above that it should be big," but at a five-megawatt level, you are talking about quite a substantial business. For example, at four cents a kilowatt-hour, a five-megawatt generator, operating 65 per cent of the time, is running a \$1-million-a-year business.

Publishing these rates with standard terms and conditions allows for a fair assessment of the value of the project from the outset, without going through the time-consuming negotiation process. It will still be necessary to have individual terms and conditions for the connection to the power system, because each project will have a different location, with different specific connection needs.

You will notice that the statement on small generators has a specific reference to full avoided cost for renewable resources, and we have built into this strategy some elements of our general resource preference for renewable resources. As has been said, we believe that is a secondary evaluation factor, but one that is accounted for in our strategy, because renewable resources will give a very high degree of confidence in long-term availability and in stability of fuel price.

The way it can be taken into account for the large producers is that this can be a factor in the bidding process, one of the factors that is evaluated, and so that can be accounted for that way for the large producers. For the small producers, the strategy specifies that the standard rate is to be set at the full avoided cost for renewable energy projects, and at present we have a special rate for renewable resources which in the long run is the same as for all the small generators, but does provide more attractive financial terms in the early years of the project. It is a front-end-loaded payment schedule for a five-year contract.

That concludes my presentation. Mr. Palmer will talk about the implementation.

Mr. Chairman: Thank you very much, Mr. Snelson. Mr. Palmer, please come forward and give your presentation.

Mr. Palmer: My presentation is a continuation of that of Ken Snelson's. I am going to concentrate on the buyback rates and their forms and on the potential for independent generation

and how it is being developed, and I am going to give you some examples of both generation and cogeneration by independent power producers. Along with doing all that, I am going to talk a little bit about the barriers that face us and the industry in the years just ahead as we understand them now.

Buyback rates are obviously the price Hydro pays for the purchases of electricity from independent power producers.

I want to talk a little bit about 1986. In 1986, the Minister of Energy asked Ontario Hydro to review its buyback rates at that time and reflect in them the principle of avoided costs. Hydro complied with that request and provided a report to the minister, who subsequently advised us that he was well satisfied with our report.

In preparing that report, Hydro engaged an American consultant well known on the subject in the United States regulatory field. He had represented interveners before regulatory commissions rather than public utilities or generating utilities, so we thought we might get a more balanced perspective from him than from someone who regularly represented utilities.

In his report, he supported our methods for determining avoided costs and the calculation of them, but he did criticize us somewhat in his report for the rates being a little bit overgenerous. He suggested we might in one area cut back on one of our factors. We decided not to do that, but I think we got a fair assessment of where the strengths and weaknesses were in our process.

Those determinations made in 1986 generally are the basis for what we are doing now.

Ken Snelson has said we have standard rates for suppliers of five megawatts or less, and the reasons are, obviously, that the small supplier, the small businessman, does not have time for a lot of time-consuming negotiations. He wants to get into business and the small-generation community generally supports that perspective. We believe it will probably result in more small power generation and negotiated rates.

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Mr. Snelson has also mentioned that the cutoff is five megawatts. While in utility terms that is not very much, in terms of small business, a \$1-million business is a pretty substantial one.

The current rates we have for this class of supplier are slightly above our long-run avoided costs. The reason for this was that we did have a formula for producing buyback rates prior to the minister's request. After we had gone through this long, involved, long-run avoided-cost calcu-

lation, we found those numbers were somewhat less than the rate we currently had in 1986.

But we also foresaw that in several years to come, the two would cross over. The formula we were using in 1986 would cross over with the new calculation of long-run avoided cost and we elected to stay with the old formula in the meantime, until the crossover occurred. It did seem to us to be counterproductive to actually reduce the rate as a result of this ministerial review, because we were anxious to promote these small suppliers and that would be regarded as a pretty negative step.

We have a fixed 10-year rate for renewables, and we have included in renewables hydro, municipal solid waste and wood fuel.

Contractual arrangements are basically standard as well, although we have remained flexible and will consider different terms in our contract to meet individual suppliers' requests and conditions. That has also given a little more flexibility to the small suppliers.

On projects over five megawatts, we have no standard rates at all. We know what our avoided costs are generally. We negotiate with those suppliers or potential suppliers within that framework and we are willing to structure any particular proposition in any way, basically, that suits the supplier, provided the total payout from Ontario Hydro stays within our avoided costs envelope. That would give us leave to supply low-cost loans, if that were part of the deal, and there might be some other considerations. So we are not bound in any way by a set price to pay out; we just structure a deal that best suits the supplier and best suits us and we arrive at some mutual arrangement.

Before I move to the examples, I want to talk a moment about some barriers that face us. One of them involves the federal government. For some years now, the federal government has had a class-34 rapid depreciation on energy conservation projects. They have included in that definition small hydro generation up to 15 megawatts, cogeneration and some other similar forms. Last spring, they made it pretty clear they were going to discontinue that particular fast write-off for people building these small projects.

I think it is fair to say that Hydro intervened, as did others, with the federal government. We sent a couple of our people up there to talk quite seriously about the benefits of this with the appropriate department. The government did not remove the class-34 rapid depreciation for now—I do not know what the future of it will be—but they

did change the Income Tax Act in a number of other ways that reduced the number of people who might invest money in this business, and in a sense, cut off some potential venture capital that might flow into the business if the provision in the Income Tax Act had remained the same.

There is a sort of dichotomy between finding capital and the nature of the utility business. The generator who supplies us will get a contract for a great many years. We have signed a few contracts for 40 years, for instance, in which we will undertake to take energy. The contract will reopen from time to time for discussions about the rate and the price, but we will be giving undertakings and have given undertakings in contracts to take power for 40 years. That is a long time and a guaranteed source of income.

If you are going to give that kind of security, then the rate of return the investor can legitimately expect to get will be reduced from what it would be if it were a high-risk venture. The venture capitalist wants to put money into a venture in which he gets his money back very quickly and gets a high rate of return, and this business does not leave much room for that.

Other kinds of institutions that invest money, like pension funds and so on, are really looking for a long-range investment and the business of independent power supply is one of these areas. On the other hand, they do not have much experience with it and they do not want to risk other people's money until they have a fair feeling of confidence about whether it is a good place to put it and whether it will be a low risk over a very long time.

I am very pleased to see that just recently one of the suppliers has had good negotiations going with a pension fund investor. We are doing our best to try to fit these two parties together in a productive way.

The other limitation and barrier is that we have places on our transmission system where we have very limited capacity to absorb new generation. The matter is particularly acute in northwestern Ontario. We have a very substantial amount of cogeneration through northwestern Ontario that we cannot develop at this time because we cannot move it any place when we cannot absorb it locally.

With those two rather particular examples, I would like to move now into some other examples.

I will start, first, with small hydro. This area has been growing fairly rapidly. We project a total potential of 200 megawatts and it might extend, possibly, to 400 megawatts in time. I

want to note at this point that our president and chairman has occasionally been quoting the figure of 500 megawatts in some of his talks. I just want to make clear that we do not have an argument with him about that; it is just that in our small hydro, we are including sites of 20 megawatts or less. It is a fact of the matter that there are a number of sites in Ontario in private hands of greater than 20 megawatts. In his determination, he anticipates that some of these will be developed along with the sites we are listing.

One of the barriers to the full development of these sites is that some of them are quite remote from the Hydro grid. It is not really economic to extend lines to the Hydro grid for very long distances for very small supplies.

In the municipal solid waste area—I call that garbage, you will recall—there is a potential of 150 megawatts or so in Ontario. It is only practical in large population centres. The very serious difficulty with it is that public acceptance is poor, mainly because of environmental concerns. That is a significant issue with municipal solid waste.

With wood waste, the potential is estimated at about 50 megawatts. It is mostly in northern Ontario. There is one seven-megawatt plant at Chapleau that is operating very well and we have another one, not mentioned here, of about 25 megawatts that is in the course of development. Not only will they be supplying electricity to the grid, but they will also be selling steam as part of their venture.

The significant barrier to this particular kind of generation is the expensive equipment required. It raises the cost of production above the value of power generated. The economics of it can always be improved if they can find a buyer for steam as well as the supply of electricity, but that is not always possible. These plants perform a very valuable function by disposing of forest wastes in an environmentally acceptable manner and might possibly be supported by government grants, etc., for that reason alone.

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The largest area of generation is the cogeneration field. There is a potential of 700 to 1,000 megawatts of private power development in major industry in Ontario in cogeneration. The potential there has been greatly improved by the deregulation of natural gas over the last couple of years. Hydro has assisted with the development and financing of two cogeneration projects and is committed to further development by the year 2000.

These efforts to encourage major industrial customers to consider cogeneration have been a factor in the rapidly increasing interest in this area. The select committee on energy has already received a brief from a major customer in eastern Ontario talking about the importance of cogeneration in keeping its competitiveness up. I am pleased to tell you that we are working with that customer in doing some engineering studies and it will probably result in a genuine important project in time.

I would like to turn now to the demonstration projects. The first one we have is Great Lakes Forest Products. It is a cogeneration project where they will develop some 37 megawatts. The fuels are mostly forest waste products and some incremental natural gas. The advantages to the company are the long-term reduction in power costs for it and an economic solution to an environmental problem of dealing with the waste matter. To Hydro, it provides deferment of generation as a broad principle, diversity and it has a short lead time. Our role in this project has been to engage a consultant jointly with the company to evaluate the situation. It cost us \$50,000. We have provided a low-interest loan of \$6 million. The status of the project is that it is under construction and the in-service date is expected to be in 1989.

The second project is Boise Cascade's mill in Fort Frances. The project itself is owned by Intercity Gas Utilities. ICG will sell all the power to Ontario Hydro and it will sell steam to Boise Cascade. This is a 90-megawatt, combined-cycle cogeneration project. The fuel is mostly natural gas, and using black liquor, which is a mill byproduct. Hydro's role, once again, was to provide some consulting costs. We committed to a low-interest loan of some \$45 million. The status is that it is not fully committed at this time. We have been slowly wending our way through all the steps. This is a fairly complicated project in which Boise Cascade supplies certain products to ICG and ICG, in turn, sells power to us and steam back to Boise Cascade, so it is a three-party project.

In addition to that, there is a consultant and contractor who is providing a complete turnkey operation for the combined-cycle cogeneration plant. It is a fairly long process of negotiation. Just recently, we struck a couple of snags—one of them involves Ontario Hydro, Boise Cascade and ICG; the other one involves only the company itself—but I think they will probably be unwound with some further discussions and so on. These things are not necessarily fatal. It looks

like a very nice project and I am sure we will get something from it.

Our purpose in taking on these two demonstration projects was not to test the technical feasibility of these things. That has been very well documented and there are many such projects throughout North America. Our real reason was to sit down in a very detailed, open-book discussion with these important customers of ours to try to develop some kind of contract that would give them a reasonable rate of return and would provide an economic power supply into the system.

I want to make another comment which I forgot to make a little earlier, particularly about Great Lakes Forest Products. The power that is produced there will be entirely used within the company. They will not sell any power to Ontario Hydro. Their load is considerably larger than this cogeneration will provide. But because they are generating it internally, it reduces the load they take from us and that gives us capacity to use for expanding needs in northwestern Ontario provided by other customers. So it is a valuable project from that perspective.

Competitive bidding project: As time has gone along and interest has developed, we have come to the conclusion that our present methods, which tended to be fairly informal in getting down and really beating out each project with the potential supplier, required changing; we needed a more formal process in order to achieve the best gain. We note that in the United States this seems to be the way this whole business is going. It is moving that way very quickly. A strong impetus for this is that the federal government in the US, through the Federal Energy Regulatory Commission, FERC, which kind of controls the utility industry to some extent, is making it very clear that it expects the utilities to move in that direction fairly quickly and to open up their receptivity to all kinds of independent generation.

We have targeted the development of about 1,000 megawatts of private generation by the year 2000. That is a target, I would like you to understand. It is not, by any means, a limit. We could accept a lot more than that if we could get economic supply. In the bidding process, we expect to go out from time to time, probably yearly, with a block of capacity to be supplied by the private sector. The projects will be evaluated on price and quality. To the extent that it is possible, we will provide the evaluation criteria at the time we go out for proposals so that each

supplier can evaluate his own project and make his own tradeoffs.

The request for proposals will include the maximum rate that Hydro is prepared to pay. That rate, as Ken has explained, could vary from place to place in the province and could vary as to the condition in which the supplier might want to supply power to us; dispatchability being one possibility.

Why do we intend to specify a block? Why not go out in quite an open-ended bid? Perhaps in time we could call for tenders for all supply, but for now we want to test the bidding process. If it has any weaknesses, we want to get it adjusted before we get too deep into a swamp. If we went out for 100 megawatts, tested that and found we should change our method of requesting bids, then we would be at liberty to do that. After a while, we would probably get the thing right and we could go out for much larger numbers.

Why do we not pay full avoided costs on all installations? Perhaps we will. The bidding process does not rule out that possibility. But surely the people of Ontario and Hydro can anticipate that competition in the private sector will produce some proposals that are cheaper than others. Customers should be the beneficiaries of that advantage. Certainly the value of the private sector participation is its competitive dynamics. I think that is an important consideration.

Calling on the experience we have gained from these two test projects, we will probably expect to offer financial incentives as a part of the request for proposals, probably in the form of low-interest loans. The total value of the purchase price and/or incentive package would, in any event, be limited by Hydro's avoided costs.

Both load displacement, such as Great Lakes Forest Products power, and power sales would qualify on suitable projects.

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What is driving us in this direction is that we think this is perhaps the fairest way to open up the market to independent power supplies, particularly on those above five megawatts.

I want to say a quick word. We have been joining with a good many companies in Ontario in doing engineering investigations of the potential for cogeneration in their particular company. We have concluded those studies for seven companies in Ontario. We have seven or eight more where we have this kind of investigation going on.

We just sit down with a company. We decide together on the consultant who is to be used. Normally it is a company that is well known to the industry and one that perhaps has done substantial work with this major industry. We agree to provide the funding for it. We get an evaluation of the project. It could be that it looks good and we would want to move ahead at this time or it could be otherwise, but that is one way we have of increasing the interest and enthusiasm in the development of cogeneration in Ontario.

There is one area of this that we have not investigated thus far in the cogeneration area. While we believe there is substantial potential out there, our resources and our efforts so far have been directed to these other areas. You cannot get too many things going. Just to get things started off, you have to do some learning. You have to do some testing and so on.

This is an area of very small cogeneration such as might be developed in commercial buildings. There is an area for that and that is not uncommon in European countries. We have not done any work in that area yet, although we have had some discussions with the Ministry of Energy about the possibility of doing that over the next year or two.

To wind this up, we are having substantial success, in my opinion, with independent generation. There is an encouraging increase in interest among potential suppliers. The demonstration projects are giving us a very good basis for further work. We are quite confident that our target of 1,000 megawatts will be easily reached by the end of the 1990s.

Mrs. Grier: I would like to understand a little bit more about how Hydro is going to determine the amount of power that will be called for in this bidding process and what will govern that determination.

Mr. Snelson: I think Mr. Palmer has indicated that when we are trying the process out, we may have a limited block of power which may be less than our requirements so that we do not get too far into something until we have gotten all the bugs out of the process.

I do not see any fundamental reason why, once we have gotten through those sorts of stages, our full supply requirements should not be attained in this way. Whether that will result in proposals that meet those requirements, I do not know. But I do not see any reason just to limit it in an arbitrary way.

Mrs. Grier: Your full supply requirements could be met—or at least you could attempt to

meet them—in this way. Is that what I heard you say?

Mr. Snelson: Yes.

Mr. McConnell: If we could get economic power from nonutility generation to meet all of our requirements, there is no reason why we would not do so.

Mrs. Grier: That is an exciting potential but what bothers me is that because the decision as to whether or not to generate is made by somebody other than you, you are to some degree at the mercy of independent decisions made by the private sector. If you begin to arbitrarily limit how much you will call for in any one year, do you not then risk missing opportunities? The company is going to make its investment decision according to its timetable, and will not wait until perhaps next year or the next decade when you might be a willing partner.

Mr. Palmer: I think you are right. I accept all that. I think the limit on the package, at least initially, is more of a cautionary one for us that we have a new bidding process. We are fairly risk-averse so we could go out and test it two or three times with smallish blocks and if it looks all right, then we could step back and say that over the next six or eight years, we will need 1,000 megawatts on the system. We could go out for that size of block.

Mrs. Grier: You are not limited in saying, "Over a longer period, we are going to need it," and let the respondees make their plans based on when they might be prepared to meet your expectations. Is that what you are saying?

Mr. Palmer: Yes.

Mrs. Grier: OK. The other factor I did not hear mentioned in all this was the environmental impact. Given, I assume, that the classification of most of these cogenerations would be private projects, they would not be subject to the Environmental Assessment Act. How do you propose to deal with that?

Mr. Palmer: I guess I would say that we do not propose to deal with that at all. If we are going out on the street and asking people on a project, we anticipate they will look after all the requirements they need to meet the communities' requirements.

Mrs. Grier: That would be all very well and good if the requirements were equal. The problem is that as a private project, they are not subject to the legislation. Then we would unfortunately have a public utility perhaps avoiding the difficulties of environmental assess-

ment by getting its power from a private component.

Mr. Palmer: That is an issue, but I think it is an issue for the Legislature as distinct from an issue for us.

Mrs. Grier: It is one more reason for bringing private projects under the Environmental Assessment Act, so I would grant you that.

Mr. McConnell: My understanding, although I could be in error here, is that this was an option for the Ministry of the Environment, to consider each of these on its own merits, and where there was a need, a public review process would appropriately be involved.

Mrs. Grier: The minister can designate a private project, but I would see that, frankly, as a very great inhibiting factor to somebody who might be willing to enter into cogeneration with you. If the effect of entering into an agreement with you was that he was going to be designated, whereas under the existing legislation he could avoid an environmental assessment, he is not likely to respond to your bid.

Quite frankly, I think the solution is to ensure that all private projects are designated, and then we have a level playing field, as our federal friends would call it.

Mr. Palmer: I do not dispute that. One of our test projects, Great Lakes Forest Products, had a serious environmental problem to deal with. Cogeneration was part of the solution for it because it enabled it to use forest wastes and it got both steam and electricity and much more efficient use of energy. In some sense, the operation reduced the negative environmental impacts it was already facing.

Mrs. Grier: I do not deny that, and I think it has real potential to do that. My point is that it has to be subject to the same kind of environmental assessment as any other project which would be initiated independently by Ontario Hydro. I think that is a real issue that is going to have to be addressed.

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Mrs. Sullivan: I have three or four questions, none of which is related to any of the others. The first one is: In accepting bids on a project, would Hydro itself participate in a bid on a project?

Mr. Palmer: I do not think so.

Mrs. Sullivan: You would be setting the standards and letting the bidder know, by example, what the avoided cost was. What you are saying then is when you are calling for the proposal, that is the standard against which that

particular project would be measured rather than through your own participation in the process.

Mr. Palmer: Yes.

Mr. McConnell: That would be particularly awkward. Mr. Palmer has already indicated that at the present time our rates are slightly on the generous side. It would cause havoc if we were to come in with our own avoided cost; it just would not be a rational process.

Mrs. Sullivan: OK. I have another question related to the central part of the financing of these projects. If Hydro were undertaking a supply project on its own, the capital costs of the construction of the plant and, I guess, probably the transmission would be financed through borrowing. In the case where we are looking at private generation coming in, those costs are included, I suppose, in the amount of money that Hydro will pay for the supply, the costs of its capital construction, correct?

Mr. Palmer: Yes.

Mrs. Sullivan: That is part of the avoided cost?

Mr. Palmer: Yes.

Mrs. Sullivan: Would Hydro then be moving into the market again and borrowing for an equivalent number of dollars to meet the costs that are coming on stream over the period of time of the contract?

Mr. Palmer: An equivalent supply alternative would reduce our requirement for money from the money market, would it not?

Mr. MacCarthy: There would be some additional borrowing requirements on the part of Ontario Hydro for that specific facility, but I think that in the majority of cases, in almost all cases, it would be less than we would otherwise require.

Mrs. Sullivan: Hydro would be going less into the market, but none the less you would be going into the market for a component of the capital costs that the private generator was creating in building a new plant.

Mr. MacCarthy: It would be dependent on the arrangement we have made.

Mr. Snelson: If we have an arrangement where we have paid for the power entirely through a rate which is paid for every kilowatt-hour delivered and we pay as we go with our payments, then there is no reason why that should require any borrowing on our part, because our borrowing for new plant is because we pay for the plant now that we are going to use in the future.

Mrs. Sullivan: Right.

Mr. Snelson: If the financial arrangements, as they have been for these demonstration projects, involve Ontario Hydro helping with the financing through a low-interest loan to the independent generator and that is part of our payments, then we may have to borrow to acquire the funds that we can loan to him.

Mrs. Sullivan: In which case you might be adding to your debt load without an equivalent addition to the assets of Ontario Hydro.

Mr. Snelson: I think there would be an obligation on the part of the independent generator to repay that loan. You would be adding to the debt load but you would be acquiring the expectation of that stream of repayments of the loan.

Mr. MacCarthy: The other aspect of that too is that typically the loan would not be for the full capital cost of the plant. It might be for a portion of it and this would be part of the negotiation. If in fact we were building a similar supply facility ourselves and had to pay for the full cost, our debt would increase by a greater amount.

Mrs. Sullivan: I understand that.

Mr. Runciman: I assume that if you provided a bonus incentive, they would do it at lower than market rates.

Mr. MacCarthy: That is correct.

Mr. Runciman: That is another factor to consider.

Mrs. Sullivan: The technical review panel, along with other groups, has recommended that there be standard rates and contracts for all producers that are reviewed by an independent body such as the Ontario Energy Board. I wondered what Hydro's comments would be on that.

Mr. Palmer: I suppose that we look upon the parallel generation of supply in much the same light as we look upon the supply of any major commodity to the corporation. All of that we purchase on a competitive bid basis and the public rather expects us to do that and to get the lowest price for a quality product. It seems to be generally that the public would expect us to buy generation from suppliers on the same basis. The customers of the system may get a reliable supply of generation at a minimum price.

Mrs. Sullivan: As you are moving into a more mature period of working with the private generating capacity, would you see that as a logical step in the evolution of the purchase price process?

Mr. MacCarthy: Personally, I would not. It seems to me, particularly when we are dealing with very large companies, that they are not unused to negotiation. They are quite skilful in presenting their position on these issues and making sure that they get an adequate return on their investment. We have as a ceiling our avoided cost, so we can ultimately move to that point. But if we can pay less than that and they can still get an adequate return on their investment, it seems that satisfies them and satisfies us and makes the electricity rates for the people of Ontario less than they would otherwise be.

Mrs. Sullivan: Just on a related point, do you find that there is enthusiasm for the incentives that Hydro is offering, or would the private generators prefer, by example, an avoided cost that was a total avoided cost? The people you are now entering into negotiations with on the pilot projects and so on, would they have entered into these projects without the incentive that Hydro has provided through the loans or would they have simply done it on the basis that Hydro was going to be buying power—

Mr. MacCarthy: Paying a certain rate per kilowatt-hour, for example?

Mrs. Sullivan: Yes.

Mr. McCarthy: I do not think that we would have had as much interest. Depending on individual companies, they have their own particular objectives, financial circumstances, etc. What we are trying to do is be as flexible as we can. If the straight rate package is most attractive, we will go that way. If a loan or partial loan is more attractive, then we will pursue that option. Do you have anything to add to that, Mr. Palmer?

Mr. Palmer: No, I think that covers this situation quite well.

If I might talk about the pulp and paper companies, on which we have spent a lot of time and useful effort, they have enormous potential for cogeneration. You have to ask yourself why they do not develop it on their own. You find when you get working with them that most of them have carefully examined that possibility and have done quite a bit of engineering work to see whether it is economically justified.

They find, though, in comparison to the price that they pay Ontario Hydro for power, that if they develop the cogeneration installation, they do not get an adequate rate of return for what is to them a subsidiary investment. Their main business is the pulp and paper business, and to develop electricity generation is another business

for them. Unless the return is quite good, they do not want to put money into it.

We found that what was needed was to do something about raising their rate of return to some adequate level. The most economic way for us to do that which appeared satisfactory to the companies we dealt with was to provide a loan at a reduced interest rate.

1450

Mrs. Sullivan: I thought that particular example of the incentive was very interesting, because of the ultimate participation in the environmental standards that have been set for that company, since there were several things happening at once in that one project. That was very interesting.

Mr. Runciman: I have a couple of questions. I was having some difficulty with the small producers of five megawatts and less. You have the standard price. You talked about four cents a kilowatt-hour. Is that correct?

Mr. McConnell: That is right.

Mr. Runciman: What are the implications if you offered that across the board to large producers as well as small producers? I gather, obviously, by going to bid you feel there are going to be some savings to Ontario Hydro. I am talking specifically in terms of not only the implications in terms of cost to Hydro, but also the implications in terms of firms, companies out there which may wish to get into the market and which would find it much more attractive—or may not, I do not know—if there were a standard set fee for large producers as well as small.

Mr. Palmer: I think the first point is that at the moment for the very small producers, up to five megawatts, our current price is above the avoided cost, which is the point we want to strike. That will happen three or four years hence. As to interest, we have noticed that south of the border when they have called for bids in the utilities they have had an enormous amount of interest.

Boston Edison, for instance, went out for a bid about a year ago for a couple of hundred megawatts and got about three times that number of proposals. We anticipate that there will be people out there ready and anxious to make propositions, and some of them will be very ingenious. I remarked the other day about—and Mr. Snelson spoke about this—the Trigen proposal in downtown Toronto. You really have to examine that proposal to see how ingeniously developed that was.

Mr. Runciman: What kind of time frame are you looking at with respect to the bidding exercise?

Mr. Palmer: We hope we would be out with a bid request by wintertime, midwinter of 1989.

Mr. Runciman: Can you tell me a little bit more about the bidding process? How will you be asking for bids? What specifically are you calling for?

Mr. Palmer: We are really at the very early stages of putting this proposition together. We anticipate that we will get a general go-ahead from our executive office, perhaps by September. We have a commitment to the industry to take it out for review before we make a firm policy within the corporation. Let's look at the time.

Suppose we get some sort of approval in September by the executive office. To do that we have to allow two or perhaps three months to get a review of it by organizations like the Independent Power Producers' Society of Ontario, the government, the Water Power Association of Ontario, and perhaps other interested people who want to comment. That brings us up to January 1 or something of that kind. We would have to take those remarks and suggestions into account and get approval from our board of directors, perhaps at the January or February meeting, and after that we would be in a spot to go out and ask for the bids. That is about the time.

Mr. Runciman: You would be asking people who wish to get into the generating business of five megawatts and above to submit a bid? Is that how this works, how you foresee it working?

Mr. MacCarthy: What we will be doing is identifying a block of power that we would be interested in, let's say 100 megawatts, and if you are interested in supplying a portion or all of that, you make a bid and we will consider it.

Mr. Runciman: What would the reaction of Hydro be if, for example, you went through this exercise and you had bids that totalled 5,000 or 6,000 megawatts? Is that possible?

Mr. Palmer: I think it is possible, but we have a time line that we had wanted to encourage generation for. There is no point in bringing on 5,000 megawatts by 1992 when the need on the system is still quite a distance off.

Mr. Runciman: I was thinking of it in relationship to the coal-fired production, really, in terms of acid gas emissions.

Mr. MacCarthy: You mean as an alternative?

Mr. Runciman: As an alternative, yes.

Mr. McConnell: I guess it is fair to say, Mr. Runciman, that it is possible, as has been indicated, but the probability of 5,000 or 6,000 megawatts being proposed that are below avoided cost is extremely remote.

Mr. Runciman: We have had people suggesting to us, and I am sure we will over the course of our deliberations, that there are 8,000 available.

Mr. McConnell: If somebody proposes to build a plant that is just straight generation, not cogeneration and not in context with his industrial process, the chances of his competing with Ontario Hydro in terms of building it at the lowest cost are extremely small.

Mr. Runciman: Or some may argue in terms of your conclusions in respect to what is avoided cost.

Mr. Snelson: I think there was a point here that you raised where you talked about additional quantities being useful to reduce the amount of coal consumed and the acid gas emissions.

Mr. Runciman: Yes.

Mr. Snelson: You then get into a point where the value of the power is less than we would think of as the long-run avoided cost, because the long-run avoided cost includes the cost of fuel, acid gas control, if necessary, and the costs of building new plant. Now, if we are talking about reducing acid gas emissions in existing plant, then the avoided cost of that is primarily the coal and possibly the investments that we would have to make in scrubbers, so we are then talking about larger quantities at lower prices, or lower avoided costs, which kind of strains the credibility a bit further.

Mr. Runciman: Yes, does it ever.

Mr. Richmond: Just to follow up on Mr. Runciman's point, without getting into a debate over whether 5,000 or 6,000 megawatts would come forward, I wonder if I could ask you this general question. On the basis of your experience and knowledge of other utilities, as Hydro fleshes out its policy on parallel or independent generation, and let's say you get to a point where each year you would put out a block of your power needs for bid, do you see revising substantially upward your target of 1,000 megawatts?

Mr. Palmer: Yes.

Mr. MacCarthy: It could well move up if that is the experience that we encounter.

Mr. Richmond: It could displace, in the projections and your targets, other means of supply?

Mr. McConnell: Yes. As we get experience, it could clearly move up and, alternatively, as we get experience, we may have to recognize that the amount there, because this is critically dependent on the amount of cogeneration, really, it basically has to be companies that are in a big business where they need steam of their own. If they just go out and build a generating station, they are just not going to be able to compete with our avoided costs.

Mr. Runciman: On this solid waste projection of 200 megawatts, I am just curious: When you have that kind of projection, does that include the things that Dr. Mills was talking about yesterday, the plasma developments in terms of the high burn rates and so on, the high temperatures in respect to generation capabilities of municipal waste? Have they been taken into consideration?

Mr. Palmer: I do not think so, Mr. Runciman. We have looked at what communities in Ontario could probably use solid waste if there were a sufficient volume and said, "What would it do in the way of generation?" We have made an estimate from that, and there are other people who have made estimates.

Mr. Runciman: That is just based on current, in-use technology?

Mr. McConnell: That is right. That sort of thing we are doing research on at the moment is certainly not taken into account in this kind of projection.

Mr. Snelson: I think you should be aware that the amount of energy you can generate from the waste depends on how much energy there is in the waste. The plasma technology would not increase the amount of energy available. It might be a different or perhaps more environmentally acceptable way of burning the waste.

Mr. Chairman: It now being three o'clock, and I have at least four more names on the list, I am wondering if we could adjourn for half an hour, run the air-conditioner and pick up with Mr. Brown at 3:30 p.m., if that is acceptable.

Mrs. Grier: Have we another presentation to hear today?

Mr. Chairman: Given that tomorrow is again quite meaty, I thought we might start on tomorrow's, if we could. We will reward ourselves by quitting early, if we can get through this. You can tell the chairman is a little panic-stricken that we might run out of time. If that is acceptable, I will adjourn the committee until 3:30 p.m.

The committee recessed at 3:01 p.m.

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Mr. Chairman: Could I call the session back to order, please; the late-afternoon session, as Mrs. Grier wants me to call it.

Mr. Brown: My question relates to small hydro projects. We have a number of them happening along the north shore of Lake Huron right now. I am interested to know how the sites are determined. How does that system work? Obviously, it is crown land. Does somebody come to you with a proposal saying, "We have located a site that is suitable," and make a proposal to you, or how do you identify the sites?

Mr. Palmer: Let me state the facts of the case. Ontario Hydro has no right to any hydraulic site in the province. The government or the Legislature has the sites and if Ontario Hydro wants a site for some reason, it has to get an order in council and go through the process.

The Ministry of Natural Resources has the responsibility for the government in the release of sites and it has been releasing sites through the years for various purposes.

We have been developing a policy with that ministry for the release of sites. It is not in place yet. We have generally agreed that sites of less than 20 megawatts would be released to the private sector for development, and we want to agree with the Ministry of Natural Resources to release sites that have an early potential for being developed. It does not make much sense to us, and I do not think to the ministry either, to release a site that is so far away from the provincial grid that there is no opportunity for its development. The prime responsibility for the release of sites lies with the Ministry of Natural Resources.

Suppose the supplier has a site, that he has investigated the site and that it will develop four megawatts. He really just needs to tell us that he wants to develop four megawatts and the price is preset. We will tell him what the price is. We will do some investigation to tell him the cost of getting connected to our system; that is, what kind of line he will develop, and we will give him that price. Then he can decide whether he wishes to go ahead with the project.

From our perspective, we would sign a contract with him. If it is a hydraulic site, we will give him a firm contract and we will buy the power for 40 years if it is a good installation. Am I zeroing in on your—

Mr. Brown: This is one of the things I was wondering about, though. The sites are not already identified, and what happens is a proponent would go to Natural Resources and say, "I believe this would be a good site,"

negotiate the rights with it, and then come to you with the proposal. Is that how it goes?

Mr. Palmer: No, I think not. I am sure there is some lobbying going on with the ministry for the release of sites; I have not really zeroed in on that. That person would not come to us until he actually had received a site from Natural Resources to develop. He would probably find out from us, if he did develop it, what kind of a deal we had going.

Mr. Brown: The proponent would go to Natural Resources and if it agreed he could use that site, he would then approach you.

Mr. Palmer: Yes, that is right. I think it is a bid process the ministry has.

Mr. Snelson: I believe part of the answer to your question on how he identifies where the sites are is that I think there are a number of surveys of potential sites which are included in reports that are in the public domain, either through Ontario Hydro or through the Ministry of Natural Resources, so he has access to both sets of documents.

Mr. Brown: That is what I was getting at. Then there would be a bid process, provided a number of people could be interested in a specific site.

Mr. Palmer: Yes.

Mr. Brown: I guess you have already answered my question. I was wondering how Ontario Hydro decides what a small hydro project is and what is large; in other words, when Ontario Hydro would do it itself.

Mr. Palmer: We have a general agreement with the ministry that with sites of 20 megawatts or more, it will inquire from us in advance if we have any plans for the development of such a site. If we say no, that we do not see it in our future, then they would put it out for bid at some stage. We have identified for the ministry those sites in Ontario that we believe would be valuable for Ontario Hydro to develop.

Mr. McConnell: We will be presenting that to you tomorrow.

Mr. Charlton: I certainly have some general agreement in principle with a number of the things we have heard this week, and specifically this afternoon. On the other hand, I have some serious concerns about the specific approach that is being expressed here this afternoon around buyback rates. Perhaps this is because it is not totally clear.

For example, I have serious concerns, not about a bidding process because I think that is

ultimately where we have to end up, but about this concept of annual small packages. I will just throw out a few of the reasons why that raises concerns for me, so that perhaps you can either just clarify it to indicate that my concerns are not real or comment on why what I think should be happening is not happening.

Part of it goes back to some of the discussions we had two years ago and some of the specific issues I raised with you two years ago around the buyback rate. For example, you are doing this annual information. We are looking for 200 megawatts of power and you do that in January 1989, saying, "We are looking for 200 megawatts next year." Then all you are ever going to get is the small projects that can come on stream in a year.

If you recall, we went through some major discussions during our last set of hearings around the whole range of industrial cogeneration potential that exists out there in the province. Again, I am going to use my home town examples because I know what is happening with them or what has been happening with them and, in my view, what should have been going on in terms of industrial cogeneration potential.

You have two major industries in Hamilton, Dofasco and Stelco, both of which, as you are aware, are huge users of energy, huge producers of heat, and huge wasters of heat as well. Dofasco does have a package of cogeneration with Ontario Hydro already; I understand that and we went through that two years ago. But you have both of those major companies, for the last several years and continuing for probably the next decade, maybe the next 15 years, going through major rebuilding in their plants, both in terms of significant process change and just basic technological upgrading.

You have companies that are doing major work and there is no way that either of them—this is going to apply to a lot of other major industries in this province—is going to be in a position to economically bid on little packages or parts of little packages. But they might be in a position to if Hydro, as part of a 20-year plan from 1990 to 2010, were to say, "Here is what we estimate we need in the way of additional power over the next 20 years and here are the increments in which we see it needing to come on stream."

In other words, you release an agenda, if you like, because I understand that you do not need 5,000 megawatts tomorrow; I think we all understand that. You could release a package on the understanding, as you have said, that you are prepared to take whatever you can get right up to

and including all future generation from private or independent sources. You can offer them the ability to plan to be able to provide you with something in the year 2000 or the year 1998—700 megawatts, 800 megawatts, 1,000 megawatts; I do not have any idea what the potential is because I have never gone in and studied those plants and I do not know if anybody has. I certainly have done tours of them and I know in my mind the kind of waste heat that exists in those facilities.

There are two things that are required or you totally miss that kind of potential. One is some kind of an agendaed package as opposed to this little block year by year. The other thing that is required is something else that we talked about two years ago, which is not only an understanding of what avoided costs are in 1988, but at least small-c conservatively, what the potential avoided costs are going to be 10 years from now, so that people can look at the economics of whatever it is they are involved in planning for their industry over the course of the next 10 years. Without those things, there is major cogeneration potential that we are just never going to get at.

Although I agree with the basics of the principles that are set out here, I do not see that kind of potential ever being got at with the process that is set out here.

Mr. Palmer: I can accept almost everything you have said. Point 1, the small block we want to start with is purely for the purpose of testing our bid process and over two or three years to be able to make some adjustment to it, if necessary, in order to fit the situation.

Point 2, when we go out we will not be asking for installations that will come on next year. We will probably ask, in the first bid, for installations that would come on five or six years from now, or at least in the period between now and five or six years from now.

Point 3, we will probably indicate our avoided costs over a number of years in the future, not for one year. I think it is well within the realm of possibility that we could give them a projection of our load forecast period, but each block in the beginning would be limited to small size until we feel we have the situation in reasonable control.

We have to learn something from the United States experience, and certainly, one of the experiences and one of the early, early people in this business was California. A lot of utilities have learned from the California experience where it went out in very open-ended situations and now has a very troublesome problem on its hands from the very act of having done that. I am

not criticizing them. The pioneers sometimes find in retrospect that the future did not turn out as they expected, but we who have come along a little later can take advantage of that situation.

Mr. Charlton: That is a fair comment and that puts a slightly better perspective on it. It does not, I think, totally resolve all the questions I have, so let's just dig a little bit further into it for a moment.

1550

We have to think not only about how we do presentations like this, because I think you can see that the way the presentation was set out leaves you with the very limited-scope perspective, especially when you take Mr. McConnell's comment—

I think it was Mr. Runciman who asked why you do not just tell them you are going to need 5,000 or 6,000 megawatts by 2006, 2010 or whatever the case is.

I understand Mr. McConnell's response. He does not believe, and there are a lot of people who do not believe, that we can get 5,000 or 6,000 megawatts of independent generation. That is fair, and I understand that; we can agree or disagree on those kinds of numbers.

But what is the harm in finding out what the real potential is out there so that as a utility, instead of saying, "We believe there are only 1,000 megawatts by 2000 and maybe a bit more by 2010, and the rest, after demand management, we're going to have to make up with another supply option of our own," you find out precisely what you can get out there economically out of the total package by making that kind of information available now, as I said, in an agenda form so that everybody understands you do not need the 5,000, 6,000 or 10,000 megawatts by 1992; you would not know what the hell to do with it if you had it by then. Make it clear to everybody what the agenda is, what the potential for buyback rates is, so that we can, if and when we have to make a decision about the next supply option Ontario Hydro is going to build, make the right decision about what that supply option is going to be.

Just as an example, we have in DSPS a whole range of options which have been looked at. The nuclear option, from your perspective, is a particularly good option if what is left in the way of need to supply the system is going to give you a four-unit plant, but you yourselves have said that Candu does not lend itself to small development.

If what we end up with at the end of the process is the need for Hydro to look at only 1,000 or

1,500 megawatts of new supply, I would think the direction in which Hydro looks is going to be somewhat different than if it is 4,500 megawatts we have to come up with, as a utility building new supply. I think, from that perspective, it is crucial that as early in the planning process as possible, we identify the real potentials in all the sectors we are looking at, in terms of demand management, in terms of independent generation and so on down the list, until we get to that point where Hydro has to make a decision about the next supply option it is going to build.

Mr. Snelson: Can I comment on that? I think a lot of what you said makes a lot of good common sense. Certainly, our processes have to be forward-looking. We have a need to look some distance into the future, and private industry is also looking into the future. Both of us have an interest that this be a forward-looking process.

The normal decision-making times of an electrical utility and a private steel company tend to be somewhat different. Our forward-time horizon tends to be longer than theirs; our need to look forward tends to be more than theirs rather than less.

Just because we are proposing a bidding process which at times may have fixed numbers of megawatts does not mean we will not be investigating what the market is to go beyond that. Yes, we do want to know what the potential really is. Certainly I, in my job, want to know what the potential is. I do not believe you can say with absolute certainty today what the potential is for economic independent generation in the year 2000 and beyond, because probably the biggest uncertainty in the economic potential for independent generation is: What will the future price be for natural gas?

Much of the potential is in cogeneration, and the preferred fuel of many cogenerators is natural gas. You cannot say with precision what the potential is for the year 2000, because you do not know what the price of natural gas will be in the year 2000. That is one uncertainty; there are, obviously, others.

Mr. McConnell: If I were to say to you, Mr. Charlton, that we agree, period, I might not be communicating as much as such a simple statement. Perhaps I could just reinforce what you are saying to emphasize the agreement.

In our strategy, we have said that we want to go out and promote nonutility generation—and we are willing to pay up to the avoided cost so that there will be no penalty for our customers to bear; you know, where we are seen giving extra amounts of money out to large private companies

and so on. If we are giving that high priority—which we are, and that is an explicit part of our strategy—we have to be in a position, in order to be proposing to advance further commitments of major supply, to have a good handle on just how much is out there that is economic, that is below the avoided cost.

As Mr. Palmer has already described, we do have studies associated with small streams, on the opportunities and where they are throughout the province, for the small hydro operations. There is a statistical question mark about how many of those will turn out favourably, but they do not have large leverage in terms of our uncertainty when you quantify that evaluation. As Mr. Palmer has already indicated, the big question mark in terms of the megawatts that will be available to us economically really has to do with the larger industrial companies and has to do with the production of both steam and electricity.

We already have a list of all the locations in the province where steam is being consumed, where there is an opportunity to consider that. That gives us some practical understanding of the range that we are working within as to possibilities. If, say, six or seven years from now, there was a new chemical company created that has not even been thought of today, that in fact is engaged in the steam business, there will be an opportunity—a merger, potentially—for cogeneration at that time.

When we made the presentation to you in the first hour of the first day, on page 17, we identified that in terms of nonutility generation, our planning process talks about what we already have existing in our plans. It talks about what we have already committed. Mr. Palmer has communicated to you today what has been committed and what is emerging at the moment.

Then we have the question of producing a forecast of what will emerge to put into our plans. That falls into two components. One is our evaluation of what we think will emerge where we already know that steam is being consumed. The other is what we forecast will emerge where the commitments are not yet even made yet.

So we get into a combination of forecasting and assessment in terms of planning the future. But the bottom line is that we do not see any limit at the present time for the median forecast or the upper forecast in what we are able to accept.

Our big question mark is what is there economically? We have given you our best estimate with what we think it will turn out to be. But we fully agree with the point you are making. We have to demonstrate that as a part of our

planning process. That will be a part of the information we will be putting forward in midyear next year. So I am saying we agree.

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Mr. Dietsch: How does that then fit into municipal utilities? How do you view municipal utilities? Do you view them as large corporations, as well? How do they fit into your plans in that respect?

Mr. Palmer: Are you speaking about municipal utilities possibly developing their own generation?

Mr. Dietsch: That is right.

Mr. Palmer: There is some little activity in that field. But for the municipal utility, generally, most of our experience to date is that when there is a supplier within the municipal boundaries, the municipal utility would prefer that we buy the power, rather than the local utility purchasing it because it has a very clear understanding for the most part and a very clear perception that the role of Ontario Hydro in its relationship to it is that we are the power supplier and the transmitter of bulk electricity.

Its role is distribution of it to the local customers. So they think in terms of their philosophy that we should be the ones who supply them with the bulk electricity. That kind of philosophy pervades their thinking.

The other issue is that its purchase of electricity from someone else makes no sense to it if it has to pay more for it than it does from us. Its marginal cost, if you like, is our price to it. And unless that independent supplier or the utility can develop its own supply lower than the price it gets from us, it does not have much interest to do it.

Mr. Dietsch: Are you treating them as a private corporation, though, if they have the means within their own boundaries to develop their own power supply?

Mr. Palmer: They can if they wish.

Mr. Dietsch: And do you augment them with dollars the same as you would private industry?

Mr. Palmer: No.

Mr. MacCarthy: Typically what they do is reduce their consumption from us, as a result. So if they have a local generating facility, then their requirement in terms of power from us is decreased accordingly.

Mr. Dietsch: Which would then leave your supply to supply other users?

Mr. MacCarthy: That is correct.

Mr. Dietsch: So then the same principle would apply to what you are trying to do with private industry. Why would it not apply to a municipal utility?

Mr. MacCarthy: We would be prepared to work with whatever generator is in that municipal utility. Or if the municipal utility itself happened to own that, we would be prepared to work with them, as well.

Mr. McConnell: All of these private utilities are located in the franchise area of the municipalities, with the exception of a few. So that by definition, we are prepared to work with those people wherever they are located.

Mr. Argue: Mr. Snelson, could you confirm that the rates per purchase now from independent generators are based on the incremental costing tables that Ontario Hydro produces from time to time?

Mr. Snelson: The incremental costing tables are used as a basis of determining the avoided cost. But as Mr. Palmer has pointed out, the current rate that we are offering is above that avoided cost.

Mr. Argue: But it is based on the incremental costing tables?

Mr. Snelson: At this time?

Mr. Argue: At this time.

Mr. Snelson: Yes. We may change that methodology, but that is how it is done at this time.

Mr. McConnell: I do not think that it is fair to say that these tables that we have represent the specific avoided cost. They are typical or representative for small decisions. We really do not use them for major decisions.

Mr. Argue: But you would use them for projects up to five megawatts.

Mr. McConnell: In developing a standard cost, if we were reviewing it, say four years from now—what was the time period that you were talking about the cross-over?—we would work it out at that time.

Mr. Argue: Quite simply, the point I am trying to make here is that at present the rates and the basis are determined using the incremental costing tables that Ontario Hydro has.

Mr. Palmer: To be perfectly straightforward and candid, at the moment, our price is not based on those tables.

Mr. Argue: It is 85 per cent of the wholesale cost price.

Mr. Palmer: It is 85 per cent of the wholesale price by formula. But we do know that if we were

using the system planning tables that you have just spoken about, the price that we would get from those tables currently is slightly below that number.

Mr. Argue: I will accept that, sir. In section 11.4B-2 on buyback rates, you talked about an American consultant whom you brought in to consult on Hydro's approach to buyback rates. You stated that he reviewed methods and calculation. I am wondering if he examined such items as the timing of the need for new power and the cost estimates that Hydro had implicitly in those tables with regard to Hydro's cost for new generation?

Mr. Palmer: We provided him with all the data that he asked for, that he felt he needed to make the determination—quite a volume of data, I do not recall the complete list, but certainly, our incremental tables, our load forecasts and all the other kinds of data that he felt he needed. He did a review of the methodology that is behind those incremental tables, and he did a review of the calculations. His remark was that he was satisfied with them, except he thought that we were somewhat over-generous.

Now that you have raised the point, I will tell you the point on which we had some disagreement. The long-run avoided costs do vary depending on how many years into the future you go. They will be lower if you only look 10 years into the future; if you look 20 years they will be higher; and if you look 25 years and 30 years, they will be higher. We were looking at 40 years into the future. We chose 40 years because we were basically looking at the life of a hydraulic station, small hydro would probably last 40 years, so, we should look forward for 40 years.

He thought 20 to 25 years was a more appropriate period to look forward. So, if he were doing it and making the judgement, he would have chosen that period, and that would have caused the rates to decline a little bit or at least the avoided cost to decline a little bit.

Mr. Argue: My question is, did he review the costing assumptions of the Ontario Hydro alternatives? I know as a consultant, when I am asked a specific question, I usually attempt to answer that question directly. And from my understanding, he was not asked to review the costing assumptions implicit in those tables.

Mr. Snelson: Can I read into the record the conclusion which Mr. Palmer referred to so that you can see the precise words that the consultant used in coming to that conclusion? That might be helpful to the committee.

In Ontario Hydro's proposed buyback rates he said, "From a sound, technical and economic perspective, Ontario Hydro's currently proposed buyback rates already represent a generous interpretation of avoided costs. While the proposed rates are still within a reasonable range, rates higher than those presently proposed cannot be supported based on the economics of Ontario Hydro's system operation.

"An increase of buyback rate offerings would be strictly artificial and cannot be justified on an avoided cost basis. Social welfare considerations could be cited as a basis for raising rates to higher levels, fully recognizing that the higher rates are not economically based and will require a subsidy from other ratepayers in the province."

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Mr. Argue: OK. This goes on with the question. I still do not have an answer to whether the cost assumptions were provided. Were the 1985 incremental costing tables or the 1986 incremental costing tables provided to the consultant?

Mr. Palmer: Yes.

Mr. Argue: Which ones?

Mr. Palmer: I think he was given a range of tables, several years of tables. As a matter of fact, in arriving at our buyback rate, we in fact averaged three years of those tables.

Mr. Argue: The question I have is—maybe Mr. Snelson could answer this—why was there such a dramatic drop? In 1985, when you calculated the buyback rate you said—again, it has always been based on this 85 per cent wholesale rate—"Avoided cost is about 89 per cent, based on the 1985 tables and we are discounting it because of metering costs and administration costs down to 85 per cent." Those were based on the 1985 tables.

Something happened between 1985 and 1986 across the board in each specific year. Suddenly, Ontario Hydro discovered that its cost of producing power in the future was going to be approximately 34 per cent cheaper in each one of those years, in the 1986 tables. The question I have is, which set of tables was provided to the consultant?

Mr. Snelson: He produced his report on July 24, 1986, and it would have been based on the most up-to-date tables available at that time. These values can change substantially from one year to the next, and the sorts of factors that have had significant effects on our changes include that lower coal prices have been forecast. A lot of the incremental cost comes about because coal is

our incremental energy source, and over the last few years coal prices have been substantially lower than they were forecast to be some years earlier.

They are also quite sensitive to forecasts of inflation rates and interest rates. I cannot give you the specifics because I did not bring the two sets of tables with me. I am not sure they are really issues that affect the strategy we are talking about. We know we have had disagreements with you and your company over calculating avoided costs over a long period of time and we are confident that our calculations will stand up to independent review.

Mr. Argue: Mr. Palmer, during your presentation yesterday on demand reducing options, you presented figure 11.3A-3, which indicated the potential for efficiency improvements at various life-cycle cost levels for demand management initiatives. Have you prepared a similar graph for independent generation potential?

Mr. Palmer: That has not been prepared in my division, but I have a feeling we did that for the Independent Technical Advisory Panel on Electricity Planning, did we not?

Mr. Snelson: I am not sure on that issue. We are well aware that the amount of independent generation potential is sensitive to the avoided-cost buyback rate, and the potentials we have given are based upon what we think will be delivered at Ontario Hydro's avoided cost. If you care to settle on a rate that is higher than the avoided cost, then you can get a different answer. As I pointed out, you have to be very careful about choosing the right alternative cost. We have seen what happens in jurisdictions where they get inflated ideas of avoided cost because they choose the wrong alternative.

If I can just make this point a little bit clearer, the story is told about a man who rode his bicycle home one day. He got home and said to his wife, "I rode home behind the bus today and saved myself \$1." She said, "Ride home behind a taxi tomorrow and save yourself \$10." If you choose the wrong alternative, you can get a different idea of what avoided cost is and you will then get a much higher potential, we agree.

Mr. Argue: That brings up an interesting question, Mr. Snelson. Would you at least admit and put on the record that there are several different ways?

Mr. Snelson: I am sorry, I missed the question.

Mr. Argue: Are there not several different ways of calculating avoided costs? There is not

this mysterious little black box where the avoided-cost figure pops out at the end and we all are comfortable and happy this is the full avoided cost. There are several different ways of approaching the question.

Mr. Snelson: There are several different ways of avoiding calculating the question—calculating avoided cost.

Mr. Dietsch: Is that a Freudian slip?

Mr. Snelson: These were thoroughly discussed in a recent paper which Ontario Hydro submitted to the technical journal of the Institute of Electrical and Electronics Engineers, and this was published at its conference this year. The paper is available. You are well aware of that.

Mr. MacCarthy: It was also tabled at the Ontario Energy Board.

Mr. Argue: I have one last question, a question that has been posed before to Ontario Hydro. There are a variety of opinions on this question. I will accept that point. There are people who are confident that Ontario Hydro is correct in its calculations. There are people who are confident they themselves are correct in their assessments and the process and methodology of determining avoided cost. Would Ontario Hydro welcome some sort of binding arbitration process that could settle this issue, if you are confident that your methodology and your determination of the price is correct; that it would win the day, so to speak?

Mr. McConnell: I think the simple answer to that, Mr. Argue, is—

Mr. Cureatz: No.

Mr. McConnell: —no. If we were to respond to every proposal made to Ontario Hydro, that every time we have a difference of opinion on something we would submit ourselves to arbitration, the rates of Ontario Hydro today would be three times what they are. We are professionals in the business of running a business and we take our business seriously. We are not about to abrogate that responsibility.

Mr. Argue: Considering that this is a new area of initiative, Mr. McConnell, such as it is with demand management, do you not think Hydro could learn something from that process as well?

Mr. McConnell: You did not ask the question about our listening to other people. Clearly we listen to other people. Mr. Palmer has described that we go out and bring in outside people to review what we are doing and that is what we were describing in this particular instance. We do that every week, bring people in to independently

review what we are doing. You asked the question about whether we would accept an arbitration process for making decisions we are accountable for, and that was the question I responded "No" to.

Mrs. Sullivan: I am going to ask a question that may be absolutely right off the wall. We know that from time to time businesses go belly up or for one reason or another, whether large or small, they cease to exist. That may occur despite the fact that they have consistent orders, a consistent customer base and so on. There may be other factors in businesses failing. If a private sector generator on whom Hydro was relying for electrical supply did go belly up, what contingency plans would Hydro have for either taking over that existing plant or in coming up with additional supply sources from elsewhere?

Mr. McConnell: That issue has come up frequently in the United States. To put the independent generation on a good, sound, businesslike footing, the North American Electric Reliability Council addressed that issue in North America, because it was a reliability issue: Could you find yourself in a situation whereby now you have it, now you don't? A set of recommendations was formulated and it was recommended that it be the business foundation for the contractual arrangements between the buyer and the seller; in this case, the seller being the private company and the buyer being the utility.

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As we move forward in Ontario Hydro, we will be trying to make sure our contracts have acceptable risk and appropriate terms which reflect what you are saying. But with the sizes we are expecting here—you know, we are not really expecting to have offers for purchases of 500-megawatt units and the like—basically, there is a good opportunity that our customers will not be undergoing undue risk, because of the variety of contracts that we will be entering into and the fact that each one of them will be as sound and businesslike as we can make it.

Yes, I think we are vulnerable, and a few instances will happen as you describe, but in terms of the percentage contribution to our total system, those risks will be acceptable in terms of the benefits that we will get out of the independent generation.

Mrs. Sullivan: What has been the experience of California, for example? Is that what created the contractual overseeing?

Mr. McConnell: The more serious risks that developed in the United States were not in the California area, they were in the Texas-Oklahoma area. The reason is there are very large chemical and petrochemical operations in that particular area and the size of the nonutility generation units that are being purchased gets up to 200-megawatt units. Those were the areas in which the vulnerability was becoming the highest. Of course, they led the parade when we developed these new specifications to make sure that for all of these there is a careful review of the terms and conditions.

Mr. Richmond: Just following on from Mrs. Sullivan's point, maybe one of the Hydro panelists could respond. If, in the future, private or parallel generation becomes more prevalent, as does the proportion of the province's power supply that is met and relied upon from that sector, would that not be taken into account in your computation of the needed reserve margin? Would that not reflect the uncertainty? Presumably, you do that now. Would that not just be built into whatever formulas you use to compute that?

Mr. McConnell: In the longer haul, the answer is yes. We cannot say that in all the past contracts we have gone through a sophisticated evaluation of the reliability component and the impact on reserves. In fact, there is reason to believe that with some of these purchases, we may ascribe a higher reliability for that block than if it were generated by ourselves. It is a two-way street. I think the long-term answer to your question is yes.

Mrs. Sullivan: Moving into the cogeneration aspect, and once again with reference back to reliability of supply and then back to the load forecast, one of the things which was indicated today as the limiting factor in cogeneration was the supply of fuel—natural gas. There are projections that the supply of natural gas is indeed going to be extremely scarce by the year 2000 or shortly after that.

If we see an increment in cogeneration that is substantial, using natural gas as a fuel, that takes a load away from Hydro. Then, all of a sudden, it has to come back. How is that accounted for in your predictions?

Mr. Palmer: One of the things we are doing with the cogenerators, and in particular the two deals we have or are negotiating, is that we require both of them to have a firm 15-year contract for gas supply—a firm contract signed for supply.

That does not completely reduce the risk, because they could be cut off for some reason or

other and therefore unable to get the supply if the situation became terribly tight in the west. But we think there is a very strong likelihood that over a 15-year period, with a firm contract with suppliers, that gas will be supplied to them.

Mr. Snelson: There is one other way in which I think conceptually you can protect yourself to some degree against rising natural gas prices. We have talked about gas being a potentially scarce fuel. In the very distant future, it is these sorts of uncertainties that you are talking about. That is the reason why we have identified that in our resource preferences.

The two things that protect the electricity customer from rising natural gas prices are long-term contracts for natural gas supply, as Hedley has said, and high efficiency. If you can have a high thermal efficiency using natural gas to produce electricity, then you are less sensitive to rising fuel prices.

Cogeneration tends to have a higher efficiency than straight electrical generation. There are schemes such as the supply of steam. The Trigen scheme in downtown Toronto, which is both combined cycle, which is a relatively efficient electrical generation process, combined with cogeneration and supply of heat to the railway lands, has about the highest thermal efficiency that can reasonably be achieved. Those are the two aspects that tend to mitigate the risk. The risk is quite significant and the way gas prices can change the potential is quite significant.

For instance, the pipeline companies, such as TransCanada PipeLines, about three years ago, before the big drop in gas prices, were considering changing all their combustion turbine pumping stations along the pipeline to electric motors. They said: "Gas is too expensive to burn to pump gas along the pipeline. We will do it with electric motors."

They now, with lower gas prices, are approaching this with schemes that would have combustion turbine with the cogeneration aspect to it to burn more natural gas to both pump the gas through the pipeline and also supply electricity to us. So the swinging gas prices that we have had in the last three years have made them swing from wanting to be electrical consumers to electrical generators.

Mrs. Grier: I am afraid two things have come to mind since my first questions. I just want to be clear I understand about the avoided cost. Every time I think I do, I get confused again. Am I correct that the avoided cost for two projects each producing, say, 10 megawatts at any one time, might be quite different because it is a specific

calculation, depending on the location and nature of the project?

Mr. Snelson: Two projects that were in different locations, but otherwise the same size, may have different avoided costs, yes.

Mrs. Grier: Is that dependent on whether one was hydraulic and one was natural gas or something? Would that be a consideration or are we just looking at location?

Mr. Snelson: I think that is a secondary consideration. It is basically the power produced today. Ten megawatts produced today in a specific location has the same value no matter what the fuel source is. The only difference that comes about through the source of the primary fuel is the speculation as to whether this is still going to be available 20, 30, 40, 50 or 60 years into the future, and at an economical price. That is really the aspect that we are thinking about.

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Mr. McConnell: If a hydraulic project and an alternative project had the same power in megawatts, were going to operate at the same capacity factor in terms of the amount of energy they delivered, delivered the energy at the same time in the year and had the same reliability, then the avoided costs would be identical, if they were in the same location. It does not matter if there are different sources. If you specify that all the criteria are the same, then the avoided costs will be the same.

Mrs. Grier: The other element that we have not talked very much about in these hearings has been transmission lines. I was struck by the comment that in northern Ontario there may be potential for small scale, but the transmission capability is not there. I assume that is still a bit of a factor when you are talking about purchases from Manitoba.

I am wondering what plans there are. You mentioned earlier, transmission lines being looked at for Windsor-Sarnia. What is the status of planning for extra transmission capability in the north or the northwest?

Mr. Snelson: In the northwest, things have been shifting a little. That is a small system—small load, small generating capacity—and it is quite sensitive. It has one major transmission line back to the main Ontario Hydro system. That is planned as a separate system because of its weak interconnection.

A couple of years ago, we felt that system needed power before the rest of the system would, and we particularly focused on cogeneration projects in that area. We gave them

transmission credits for being able to delay the need for other facilities on that system and to delay the need to build a new line from southern Ontario to the northwestern area of the province.

The load growth has not been quite as high as we expected up there. The success of the independent generation, where we have projects around 120 megawatts, which represents about four or five years' growth in that area—and the Little Jackfish hydraulic project is also in that area—has now led us to the point where we feel that, with what we have, we have enough to satisfy the needs of northwestern Ontario. We can take a little more and move it from northwestern Ontario into southern Ontario, but only a little bit more.

Mrs. Grier: Because of transmission.

Mr. Snelson: Because of transmission. The reinforcement of that transmission line is a major undertaking. We are talking about transmission for all the way, essentially, from Sudbury through to Thunder Bay. We are talking about many hundreds of miles of transmission line, with a cost of the order of \$500 million or \$1 billion. That transmission line is a very expensive project.

One of the things we are essentially doing is managing that system up in northwestern Ontario to avoid building that transmission line before we need to. It has been a very dynamic situation, and the transmission considerations are crucial to how much independent generation and hydraulic generation we can take up there.

Mrs. Grier: So there is no prospect of the potential for small-scale hydraulic cogeneration being sufficient to justify further exploration of the transmission.

Mr. McConnell: I think that is essentially right. It is limited on the basis of what Mr. Snelson has already identified. We have had good success on going ahead with the independent generation in the northwest that has just been described. Mr. Snelson has indicated that there is a limit in terms of the amount of cogeneration we can take on now, but I believe we have figured out that we can take on a bit more cogeneration. I think we still have enough tie-line capacity to take on perhaps another—is 100 megawatts our last evaluation?

Mr. Snelson: We have talked about 100 megawatts.

Mr. McConnell: So we still may be able to have the higher avoided cost of perhaps another 100 megawatts, but once that is taken up, the

avoided cost plummets to just the differential fuel costs coming out of Atikokan.

Mr. Chairman: Are there any further questions? Perhaps we can move on to the next subject, supply and purchase. Mr. McConnell, there is a subject, "Supply General," which I take to be just an introduction; then there is "Supply Approvals." I am wondering if we could hear both those presentations and then pause for discussion.

Mr. McConnell: That would be fine.

Mr. McConnell: There were questions asked by members of your committee, and we undertook to get written answers to those. We have a set of answers we could now table with you, if you so desire. How would you like to deal with that?

Mr. Chairman: If you could table it with the clerk, she can copy it and distribute it to all the members. I think that would be the best way, Mr. McConnell.

Mr. Snelson: We are making progress. We are moving on from independent generation to supply. That is four down and two to go; we are on number five. The strategies we are dealing with under supply options, item 5, are actually a subset of supply options. We are talking about the supply Ontario Hydro would own and operate, so that substantially excludes independent generation, which is also supply, and purchases from outside the province, which will be dealt with under item 6.

The strategy element I am talking about is a general one. It says, "Major increases in supply will be provided by the lowest cost supply or purchase options available to meet the need after allowing for the effects of demand management and independent generation." I am going to discuss the elements of that statement.

You have heard in our presentations on the options and on the strategy elements covered to date, the importance we are placing on demand management and independent generation. We expect options in both areas to make significant contributions to meeting our electricity needs and we are placing a high priority on making this happen. You have also heard about the load forecast and the bandwidth we must plan for. Economic demand management and independent generation, by our estimation, are not by themselves sufficient to meet those future scenarios of electricity needs and it is our conviction that sooner or later we need to plan for major supply options. The next slide discusses the need for these major options.

This you can think of as the balance sheet of electricity supply. On one side we have the liabilities, and on the other side we have the assets, except that we call them load and capacity. By the year 2008, which is the end of the 20-year planning period, we expect to have a basic load forecast of 34,800 megawatts. That is the load we expect our customers to require, taking into account any efficiency improvements they would implement of their own accord to reduce their electricity bills. It takes into account those sorts of efficiency improvements.

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With regard to load shifting, we are aiming for 1,000 megawatts by the year 2000. By 2008, that could grow to 1,200 megawatts and still be acceptable to the system. We are counting on efficiency improvements of 2,000 megawatts by the year 2000, and it could go to 2,400 megawatts by the year 2008.

That results in our primary forecast. You will recall that Mitch Rothman, in his presentation on the load forecast, referred to that as the load we actually have to supply from our system, the load our customers demand after taking into account all the efficiency improvements, including the ones that would come about through our programs.

We have interruptible loads, which we expect by that time to give us a relief of 800 megawatts at times of capacity shortage. Interruptible loads, for instance, were cut last Thursday and Friday when we got into supply shortages. That is something we do not plan generation for.

The load my department, generation and resources planning, works to is the planning firm load, that is, the load we must supply reliable generation to meet. By the year 2008, we are expecting that to be 30,400 megawatts with the median forecast. With a reserve requirement of 24 per cent, that leads to required generation of 37,700 megawatts.

If we look at the capacity or the asset side of the table, existing and committed generation, including Darlington, everything that is existing and under construction on the system comes to 33,900 megawatts. Hearn and Keith are mothballed now and would not be economical resources for the long term, so you can subtract 1,500 megawatts there. Lakeview is approaching the end of its life and would normally be retired before 2008. I will come back to that. There is a unit at Thunder Bay, which is presently mothballed, that also would reach its retirement date before 2008.

The generation less retirement would come up with an existing generation capacity of 30,000 megawatts. Allowing for 1,200 megawatts of independent generation would lead to a total generation on the system of 31,200 megawatts, leaving 6,500 megawatts of new supply being required.

Now then, we have got some things under way that are aimed towards meeting that 6,500 megawatts. We have identified plans for hydraulic generation; they are expected to yield 1,000 megawatts. We have plans to rehabilitate Lakeview. We have to rehabilitate Lakeview; otherwise, we cannot get through the 1990s. The decision which has not yet been made is whether that will be a long-term rehabilitation that would keep Lakeview going past 2008 or not.

Even with those sorts of programs, we would still need over 3,000 megawatts of major supply in this median scenario. For the low scenario, we have to remember that we are planning to a bandwidth and not just a single line. For the low scenario, demand management and independent generation would be more than enough. For the upper scenario, the need is in the order of 15,000 megawatts or more. So for the upper scenario, it is very substantial. Our conclusion is that major supply is most probably needed. We cannot say that with certainty, but that is the conclusion.

What do we mean in the statement when we say, "Supply or Purchase Options Available to Meet the Need"? In the idea of availability, we are including the ideas of both timing considerations and social and environmental acceptability. In determining whether an option is available to meet the need, you have to consider how long it takes to develop the option, what is its lead time—particularly given the state you are at now—and how long it is before you have a need. Do those two match? Is it going to be available in time? That is the timing consideration, and we have stated many times that if an option is not socially and environmentally acceptable, then it is not acceptable; it is not available.

The statement then goes on to talk about the lowest-cost supply or purchase option. The guiding principle we have is that low cost is vital. This statement says "lowest cost," but I think you have to interpret our strategies as all statements qualifying each other, and there are a number of factors identified elsewhere in the strategy that may lead to some deviation from lowest cost. Other factors that will have to be given some judgemental weight on the choice include flexibility, resource preferences and diversity. Some of these factors can be quantified, but often they

cannot be put into monetary terms and included in the cost evaluation. Therefore, the choice of supply or purchase options will be based largely, but not exclusively, on lowest cost.

Just to summarize this very brief presentation, the supply choices are going to be made after taking into account the effects of economic demand management and independent generation. The current estimates are that major new supply or purchases will be required under most scenarios within the 20-year planning period. We will choose the lowest-cost supply or purchase option, provided it is available in time and provided it is socially and environmentally acceptable, and there are other factors such as flexibility and diversity which may have judgemental impacts on the decision.

Mr. Chairman: Perhaps Mr. McConnell could come forward and present us with the next paper.

Mr. McConnell: Mr. McConnell, a new member of our team, is assistant to the director of system planning. I would like to acknowledge that Mr. McConnell played a very major role in helping to organize all this material that you have before you; so if you feel it is too much, you can blame him, and if you feel it is just right, you can give him the credit.

Mr. Charlton: I have problems carrying it back to my office every night.

Mr. McConnell: As Mr. McConnell has said, I am new to the panel. He said there would be some new faces and some old faces before you in these hearings; I guess I am one of the new faces. I am new before you, but I have been a long time with Ontario Hydro and a long time in system planning.

My presentation deals with the set of two strategy elements on supply approvals. If you could just take a quick look at those, the first one is, "Ontario Hydro will seek improvements to the planning approval process to provide increased flexibility." The second one is, "Approval for new transmission to incorporate new generation shall be sought as part of the generation approval process."

What I would like to do in my brief presentation here is to try to discuss briefly the rationale for these two strategy elements. From earlier discussion among the committee, I feel there is already some empathy among you for these two strategy elements.

Let me take you back to the start of the hearings last Thursday and Ontario Hydro's briefing sessions. In presentation 1B, Mr. McConnell gave you Ontario Hydro's intents and

expectations regarding reviews and approvals of our plans and projects. To me, last Thursday seems a long time ago, and I would just like to remind you of those statements.

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First, Ontario Hydro intends to maintain an open consultation process with its customers and publics regarding its plans and projects.

Second, Ontario Hydro expects that all major projects will continue to require approvals, in accordance with provincial and federal legislation. I think you have heard that there are many such approvals we come under. Some of them are listed on page 2-10 of the DSPS document.

Finally, Ontario Hydro expects its plans to be reviewed from time to time in accordance with requirements established by the provincial Legislature or government. We have had such reviews by royal commissions or by select committees, etc.

Before I go any further, I want to establish one or two assumptions we should bear in mind in this presentation.

First, the members of the board of directors of Ontario Hydro are appointed by the government of Ontario and we assume that they will continue to review and approve Ontario Hydro's plans and projects. We also assume that the provincial government will continue to approve all major projects by an order in council under the Power Corporation Act.

I would now like to discuss two issues which I feel are at the nub of the subject of supply approvals. The first one is meeting the broader public interest and the second is the value or benefits of timely approvals.

First, looking at the broader public interest, before Ontario Hydro's board of directors and before the government approve a major supply facility, what responsible actions are required to ensure such facilities are in the broader public interest? I think there are two things there.

Hydro suggests one primary requirement is to provide the opportunity for all Ontarians to comment on the need for the project and whether it is a good option; that there has been a good choice.

The second primary requirement is to provide the opportunity to ensure acceptable environmental protection, particularly considering those people who would be most affected by the project, who are local to the project facility. That does not exclude other people, but I think the major emphasis would be on the local people.

Moving on to the question of the value of timely approvals and commitment, we feel it is

very important that supply projects be approved on a timely basis, to ensure that low-cost reliable power continues to be available to our customers, now and in the future.

Just a little definition: What do I mean by lead time or timely commitment? That is made up basically of two components: first, the planning and approval time; second, the time to build the project itself.

Another aspect of this value of timely commitment, of timely approvals, is planning flexibility. If we look at the upper and lower bandwidths of our December 1987 forecast—and here we are talking about the basic forecast, before any adjustments are made for strategic demand management—we find that the further we go out in time or the larger the lead time, the larger that bandwidth becomes.

If we looked at a lead time of nine years from now, we would be talking of a bandwidth of close to 10,000 megawatts; these are peak megawatts on the system. If we went out to 15 years from now, we would be talking of a bandwidth getting close to 19,000 megawatts, which is close to the summer peak we all experienced just recently.

We can see that longer lead times obviously lead to much broader uncertainty in terms of the load growth uncertainty we have to cope with. Contrary to some opinions, flexibility does not come free. The larger that uncertainty becomes, the greater is the cost to provide flexibility to cover it. We can achieve a major saving in our customer costs by reducing lead time. I have identified that there are two components, so obviously we can reduce the lead time either by reducing the construction time or by reducing the planning and approvals time.

What does an optimum approval process look like? We would like to suggest a couple of objectives and a couple of areas of scope for the approvals process.

First of all, we feel that, for the objectives, the process should ensure the protection of the broader public interest while achieving the approvals in the shortest practical time. With regard to the scope of the process, we feel that it needs to cover the needs assessment of the facilities and how they are integrated into an overall plan, as well as the environmental assessment aspects of individual projects. When we look at our strategy element 5.2.1, the first of this set, the essence of that strategy element is that we want to work to improve the process towards this sort of optimum.

Just taking a quick look at transmission associated with new generation, whatever the

process established by the Legislature and the government to improve the application of the existing legislation or to improve the existing legislation itself, we suggest that the incorporation transmission, as we call it, be included as an integral part of the process for approval of new generation, at least as far as establishing the need is concerned.

This is really the essence of our second strategy element 5.2.2. in this set. That is being proposed to integrate the transmission required for generation as an integrated process so that we can avoid such high penalties to our customers as the over \$200-million cost consequence of the delays to the transmission from the Bruce generating station. You have heard that factor and those figures a number of times during this hearing.

Just one last thing, and that is with regard to what we see as the responsibilities. We see that it is the prime responsibility of the Legislature and government to establish and improve the approval process for plans and projects. The government has the final decision there. Accordingly, these two strategy elements are put forward in the spirit of seeking improvements to the planning and approvals process.

That concludes my presentation. Thank you.

Mr. Chairman: Thank you, Mr. McConnell. Are there any questions of either Mr. Snelson or Mr. McConnell on their presentations? Mrs. Grier?

Mrs. Grier: I just want to clarify. This is really a semantic question, Mr. Chairman, but in Mr. McConnell's presentation on the approval assumptions, he says, "It is also assumed the provincial government will continue to approve all major projects by an order in council." Do I take it that you anticipate no greater objections to your projects from this government than you received from any previous government?

Mr. McConnell: I am not too sure how we are supposed to take that question.

Mrs. Grier: I prefaced it by saying I thought it was a semantic question. I assume you mean that where the provincial government deems it appropriate to approve one of your major projects, it shall be by order in council.

Mr. McConnell: I agree that that would be better wording. We have no concern with that existing process.

Mrs. Grier: We are talking process; I realize that.

On this whole question of the optimum approval process, where you say your objectives

are to ensure broad public interest and, at the same time, the shortest practical time, I happen to think that the two do not coincide, and I am concerned when I hear yet again the cost attributed to the delays in the southwest transmission line, a process in which I was very much involved before I came to this place. I think Hydro's mishandling of the whole approval process was what led to a lot of the delays.

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I am glad you want to improve the approval process. I asked the other day whether you had learned anything from that and were going to be doing anything different in seeking approvals for the Windsor and Sarnia transmission corridors. I am not yet reassured that in fact the salutary lessons from the southwest transmission corridor hearings have been absorbed. Maybe you would like to comment on that.

Mr. McConnach: Certainly, it is an astute observation that we have been learning from applying this process. This law was enacted, I believe, in 1976 and, over the past decade or so, there has been a bit of a learning experience in terms of applying that process. I think it is true to say that everybody has been learning: the government, the agencies and Ontario Hydro.

Mrs. Grier: One of the clichés I think can be quoted is, "The longest way round is the shortest way home." If you put in the preparatory work, involve everybody and share all the information at the earliest possible stage, then you will expedite the approval process. The whole problem with the southwest transmission corridor was that one whole segment did not feel involved in the first hearing and so you had to go through it all again. I think that is a pitfall you need to avoid in any further approvals.

Mr. McConnach: That is a good point. I think we can learn from that. We hope, in our spirit of trying to improve the process and working with government to do that, we will take that sort of experience into account.

Mr. McConnell: Yes, we were not trying to lay blame here. We were really focusing on what would be in the best interests of society, in terms of the broader public interest, and also the best interests of our customers, in terms of having a timely process.

It was not our intent here to be laying any blame. We were just saying that if there is a \$200-million consequence, there is a need to have a better way. On the following page, we identified that it could be improving the application of the existing legislation or improving the

legislation itself. We were not being specific. We were saying those are the two things that need to be looked at, if one is looking for improvement.

Mrs. Sullivan: When the Ministry of the Environment representatives were here last week, I asked them questions relating to their own involvement and consultations with Ontario Hydro in terms of the speeding up of the approval process. They indicated that they were willing to talk, but I was not satisfied that there was an awful lot of talking going on between Hydro and the Ministry of the Environment.

I note in the ministerial report that they invited Hydro to participate in the Environmental Assessment Act review. That in itself is going to be a long process, and I assume Hydro will be participating in that. In the meantime, are there ongoing consultations, in terms of the kind of information you are providing to the Ministry of the Environment in relation to the three specific areas you are interested in moving forward on?

Mr. McConnell: First of all, if we can go perhaps in reverse order, we are talking about a durable strategy. We do not know whether when you talk about a durable strategy, everything will necessarily be settled this year or next year. What we are really saying is that whatever our experiences are, this province learns what we learn and what the government learns and what the Legislature learns.

We are really saying here that we have an obligation of continuing to pursue, in co-operation with the government, what we call this optimal challenge of trying to get things done on a timely basis which is, at the same time, acceptable in terms of the broad interest. That was really one point. We look upon this as a durable, ongoing process.

To go to specifics, the Ministry of the Environment has invited Ontario Hydro to participate in its review process. Of course, we were delighted to do so. We do in fact have members in their review process; that is taking place.

Third, in our presentation of the optimum approval process, our suggestion to you people is that an optimum process should consider needs assessment of an integrated demand/supply plan. I would point out that, at the moment, this province does not have any such process. I just wanted to make sure that, in our definition of "optimum process," you understood we are suggesting something that does not exist. That was just a tag-on to your question.

Are we communicating? Yes. On the other hand, I am not too sure that the Ministry of the

Environment is necessarily the agent that needs to be looking at the integrated process.

Mrs. Sullivan: On the other hand, when you are looking at an integrated system, in many ways you are looking at concurrence with policy recommendations as much as you are at the actual approvals which come in the planning stages. I am going to have to think about that one and maybe come back with other questions.

Mr. McConnell: To be more specific in terms of the meaning of integrated demand/supply process, I believe that this committee will have a technical advisory panel appearing before it and that recommendation 20, which was conceived by Mr. Govier from Alberta, addresses the question of an integrated process. I just wanted to bring that to your attention. I can assure you that I had nothing to do with putting that in his mind. That was his own initiative.

Mrs. Grier: Could you repeat that recommendation for those of us who do not have it in front of us?

Mr. McConnell: Yes. I was not suggesting that we agree or disagree with it. I was simply pointing out that he addressed it. That "The Ontario government establish by legislation an independent technical agency to conduct in-depth public review of Ontario Hydro's power system plans and to reject those plans, approve them or approve them in part or with revisions." That was not referring to projects.

Mr. Brown: I come back to the point that we are looking at this almost assuming there is going to be an increase in demand, that we are going to need more supply.

Another view might be that the province decides, for whatever reason, that there can be no increase in supply, just as a scenario, and says to Ontario Hydro, "You will not increase your supply." In other words, you are going to have to deal with the equation through only the demand side. What would it cost to deal with the entire situation through the demand side, because that is the only alternative we are giving you?

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Mr. McConnell: We did address that option. It is inconsistent, of course, with the Power Corporation Act.

Mr. Brown: I understand that.

Mr. McConnell: I do not think we could say precisely what the number is, but I would think, for example, that if we were to triple the rates of Ontario Hydro to all customers, and that would be enough to bring this province's prosperity to a halt and start it going down, and that would

achieve what you are talking about. There would be some point at which we would make the rates high enough that they would turn Ontario off and provide a limit on the electrical demand.

Mr. Brown: I recognize that, but has there been any work done to say what that point might be in terms of electrical rates?

Mr. McConnell: Mr. Snelson addressed that question. It was identified in chapter 10 under representative plans, and some information was contained in the supplementary documents. At the same time, we were making it clear that we felt that in our strategy we were assuming we would not be asked to act as the depressant on Ontario's economy, and that we would continue to conform to the Power Corporation Act of delivering power at cost. Do you have the numbers there, Mr. Snelson?

Mr. Snelson: I am just trying to find them. I do not have the exact numbers, but I can give you some indication. We looked at plans in the representative plan studies where, when we ran out of economical demand management in independent generation options, we increased the price of electricity to suppress demand.

In some of the median cases, that only took place towards the latter part of the study period and the increase in price was not all that substantial, but in the upper scenario, if you had to suppress demand, and at the same time there otherwise would have been strong underlying economic growth in the province, then you would be talking about doubling the price of electricity above what it would cost just solely to depress demand. It was a very substantial increase in price. The provincial economic impacts of that were modelled and the conclusions of our economists were that it was quite negative for the provincial economy.

Mr. Chairman: Are there any further questions on this section? Perhaps we can move on to the next, "Unit Size, Plant Size and Flexibility," which is a short one.

Mr. Snelson: Before we started today, I made a bandwidth forecast as to how far we would get today. My upper growth scenario had us getting as far as 11.5A, but it certainly did not get as far as 11.5C. Seeing as we try to plan flexibly, we are prepared for it.

Mrs. Grier: Touché.

Mr. Snelson: This presentation deals with unit size, plant size and flexibility. I will discuss the strategy element, some of the flexibility concerns that have been raised about large plant sizes and a general discussion of the economies

of scale. I will try to discuss what is an economical unit size and the benefits of multi-unit stations. Clearly, there are implications on sizing and siting that come about due to how big the system is and how a large-size unit fits with the system. Then I will come back to the strategy statement itself.

The strategy statement says, "Single or two-unit commitment of economically sized units in multi-unit stations will be considered to maintain flexibility,"

We have heard a lot of concerns being raised about flexibility and that big generating stations are not sufficiently flexible. These sorts of concerns usually take the form of statements like: "Large units have long lead times which make it difficult to match generation to load. Smaller units would be more appropriate in a period of lower growth. If load growth turns out to be lower than forecast at the time of commitment, then it is difficult to slow down construction. Therefore, large units contribute to costly surplus situations." On this basis, it is claimed that small units would match a period of low growth better.

Sure, small would be more flexible, but the other side of the coin is economies of scale. The reason large generating stations have become common in the electric utility business is that, as stations get bigger, costs per unit tend to be smaller. This is the so-called economies of scale.

There are some options where economies of scale cannot be obtained because the option itself is a limited-size resource. For instance, the hydroelectric plant has to be sized to take into account the water flow and the fall in water at the site where it is developed. Some of those will be small; some will be large.

Similarly, a cogeneration plant is usually sized based on the steam requirement of the cogenerator and that determines the size of the plant. In those cases, there are economic opportunities and the economies of scale do not apply.

On the other hand, when you come to the single-purpose electrical generating plant, then there are very substantial economies of scale. Larger stations have higher efficiency because they can have all the specialized systems, like reheat and economizers, that make the thermal efficiency of the unit very high. Large plants permit the more effective use of capital because the capital cost per unit of output is lower. Large-sized stations have lower operating costs because, per unit of output, they need fewer people to operate than an equivalent number of smaller stations. This contributes to lower

operation, maintenance and administration costs.

Mr. McConnell showed you a slide of the electricity prices in real terms over most of this century. The electricity price in real terms fell very substantially from the 1920s to the 1950s and has been reasonably stable in real terms, i.e. rates have gone up at close to the inflation rate since that time. The economies of scale in all areas of the electricity business have made a very large contribution to that lowering of real electricity costs and to maintaining electricity costs low in the face of increasing environmental requirements and increasing real costs for some of the inputs, such as labour. But you do not go too far in this direction. If you get to very large stations, you end up with situations where they become overly complex and reliability tends to suffer.

What is an economical unit size? Our experience, which is consistent with the experience of other large utilities, is that the optimum unit size is approximately in the 500-megawatt to 1,000-megawatt range. This is the large steam generating plant. By this size, most of the economies of scale have been obtained and there is little to be gained by going beyond.

For the coal-fuelled plant, there seems to be little advantage in going beyond about 500 megawatts, particularly if the plant is required to be operated flexibly. That is how we use our coal-fired plants. They are often shut down overnight because the load is down and so on. That is more difficult with larger units.

Our evaluations show that the standard cost per kilowatt hour of a 500-megawatt or an 800-megawatt unit is about the same and that there is a very substantial penalty in going down to, say, the 200-megawatt size like Atikokan. The standard cost for new 200-megawatt units is estimated at 15 per cent higher than the 500-megawatt size.

For nuclear plant, the optimum size appears to be a little bit larger. We would estimate that of the sizes we have considered, the 880-megawatt size is as economical as any other. A 1,200-megawatt size would have about the same cost. A 540-megawatt unit would have about 12 per cent higher costs.

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Mr. Cureatz: The smaller the unit, the higher the cost?

Mr. Snelson: Yes. The higher the unit cost.

We also, as you are aware, have a practice of designing and building multi-unit stations with four to eight units in the station. This practice has

contributed to lower costs in all phases of the station's lifetime. There are common services that can be shared between units. A multi-unit station will have one cooling-water intake from the lake, one water treatment plant, one set of repair and maintenance facilities, etc. This contributes to lower costs.

Since the design of all the units will be the same, except for minor details, multi-unit stations will have lower engineering costs. Essentially, each one is a repeat of the previous one. When it comes to manufacturing, major equipment manufacturers will quote a lower price for four similar turbine generators than they will for four of different design.

When you come to construction costs, a co-ordinated construction program for a multi-unit station is more efficient, as workers can move on from one unit to the next, applying the lessons they learned on the first to the subsequent similar units.

Mr. Charlton: Does that mean the fourth one always works better?

Mr. Snelson: Actually, you would be surprised. The commissioning experience on our units has been very definitely different. The first unit of a multi-unit station has much longer commissioning time than the second and subsequent units.

In planning, we allow for 12 months' commissioning time on the first unit of a multi-unit station, nine months on the second and six months on the third and fourth units. In point of fact, I think Pickering unit 4 was commissioned in on the order of two or three weeks. It was a very short period of time because the bugs had been ironed out on the earlier units and they knew what problems to expect and how to overcome them. Clearly, there are also economies on the operation side as well.

Mr. Cureatz: I have another interruption and I will withhold myself thereafter. Darlington is 540 megawatts?

Mr. Snelson: It is 880.

Mr. Cureatz: I am sure that in one of our last incarnations of the last 10 years, we had someone from Atomic Energy of Canada Ltd. here who said that 880 megawatts would be the highest it would ever build because if you get any bigger, you lose the cost efficiency. I am slightly surprised now to hear you people say, "Oh, no; 1,200 is fine."

We will talk about that another time, but I sometimes think that as conniving as you people are at Hydro, you know the hassles of the

Ministry of the Environment and going through the whole process in which, you know, I fought tooth and nail to exempt you people at Darlington on the environmental assessment hearing. You have come up now with this great scheme by saying, "For the expense and aggravation of a full assessment, it is going to be cheaper to build a 1,200-megawatt unit." What do you say about that?

Mr. Snelson: First of all, there are no plans to institute 1,200-megawatt units in Ontario Hydro. It is being considered, but there are no plans.

Mrs. Grier: What about Darlington B?

Mr. Cureatz: Yes.

Mr. Snelson: The experience of other utilities has been that quite a number of nuclear stations throughout the world have been built in the 1,000-megawatt to 1,200-megawatt range. The general consensus is that the economic size is somewhere in the 800-megawatt to 1,200-megawatt range for nuclear units. Having got a design for an 880-megawatt unit, we very much doubt that we would be interested in throwing that design out the window and doing all the work necessary to get a new design up and running. So it has been looked at, but it is not proposed.

Mr. Cureatz: Thank you.

Mr. Snelson: Basically, when you add it all up, we find that four-unit stations are 15 to 20 per cent less costly over their full lifetime than single-unit stations. Again, there is a caution. If you were to go to a very large number of units all the same, what sort of risks would you be taking? You have to recognize that since the design, the manufacture and the construction of all the units are the same, a fault in one unit may exist in all units.

Despite careful design, faults that affect several similar units have occasionally happened. For instance, we had a problem with the boiler hangers at Nanticoke that required us to take all those units out of service in a very short period of time because the problem was found to be common to them all. So in system design, we have to consider whether the system has some robustness to cope with that sort of event. That is a factor my department would take into account in system design. There is still some saving grace, and that is that once the solution has been found for one unit, you can apply it to all of them.

Some other sizing considerations: I am thinking here about size relative to system size. The Ontario Hydro system is of the order of 30,000 megawatts of generation. Units of 500 to 1,000 megawatts, which are the generally economical

size, represent only two to three per cent of system size, so for a system the size of Ontario Hydro's system, a 500-megawatt unit or even a 1,000-megawatt unit is still a very small proportion of the system.

If units are large compared to the system size, there are reliability concerns and that is something system planning has to take into account. You have to consider whether the system can be managed if a large unit fails. In northwestern Ontario—we have talked a little about that this afternoon—we have a limited-size system of about 1,000 megawatts and we have restricted unit sizes to the 150- to 200-megawatt range because of the system size. But as I have said, the main southern Ontario system is large enough that 500 to 1,000 megawatts are manageable.

Another aspect is the size of the units relative to load growth. We have talked about lower growth. We have talked about a load growth of two to three per cent as being our forecast and everybody is aware that in the past it was seven per cent. This feeds a common misconception that load growth is much lower than it has been in the past. To some degree, we tend to cause it in the way we present facts in that we often talk about percentages, and percentages can be misleading in this regard.

What really matters is how many megawatts of load growth there is. When the system is bigger, the same number of megawatts come out as a smaller percentage. For instance, a 1,000-megawatt load added to a 20,000-megawatt system is five per cent growth, whereas adding it to a 10,000-megawatt system is 10 per cent growth. So there has been this misconception.

There were a few years of low growth in the late 1970s and the early 1980s. In the last five years we have seen the highest growth ever. The forecast growth is expected to be more modest at about the average of the last 20 years, and that is about 600 megawatts per year. Five hundred to 1,000-megawatt units are of the order of one to two years' load growth, so they are not grossly out of line with the load growth expectation.

Siting considerations: Clearly, with large stations, fewer sites are needed. Considering the difficulty of obtaining sites and the efforts Mr. Cureatz went to to help us get the site at Darlington, we can see that obtaining sites is a difficult matter and it makes sense to use them well. As a practical matter, it is difficult to see how we could have found 20 sites in southern Ontario for single 200-megawatt unit stations such as Atikokan instead of building one plant at Nanticoke.

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One of the representative plan strategies was to build smaller plants closer to load centres to reduce the need for transmission. Transmission costs were reduced but not sufficiently to cover the increased costs of generation. There were also other concerns. For economy, these plants would tend to be coal fuelled; plant sizes were too small for nuclear to be economical. The increased use of coal raised concerns about local environmental impact, overreliance on coal. It was therefore difficult to meet province-wide emission regulations, and the need to transport coal by rail had cost and environmental impacts.

To summarize what the strategy says and why it says it, one of the major reasons for Ontario Hydro's low costs has been that we have built fossil and nuclear units of large economical sizes in multi-unit stations. The strategy proposes to retain this basic approach with some modification to increase flexibility. We are proposing that, for major supply increments, large units will be retained for their economy, multi-unit station designs will be retained for their economy and some additional flexibility would be obtained by considering the commitment of the units one or two at a time. This will permit most of the benefits, but not all of the benefits, of large units in multi-unit stations to be obtained, and it also allows decisions to be made in an incremental way as the needs evolve.

Mrs. Grier: When you talk about one-unit or two-unit commitments at a time, would you be seeking the approvals for the total potential of the site and for the total transmission potential of the site?

Mr. McConnell: We find it a little difficult to answer your question because we really have not formulated any plans, but I think we would have to be very open. If we were talking about committing two units, we would have to very open in the review process that we were laying it out as a four-unit station. As far as getting an order in council from the government and so on is concerned, we would be soliciting the approval for only the two, but in the environmental assessment review process I would think it would be only fair to conduct the review on the basis that there was an assumption there would ultimately be four.

Mr. Charlton: Just out of curiosity, as we go through this whole process, there are a number of statements here about larger or smaller transmission costs and all the rest of that. Do you have a standard costing package we can look at where we can sit down and see the way your planners

would view a scenario around questions like this?

Mr. McConnell: Yes. As far as this series of briefs last week and this week is concerned, we felt we really needed to present information germane to the strategy. On the other hand, you and others have shown an interest in what the costs are, and we did offer to make presentations to this committee on costs if you so desired. We could give you a detailed presentation on a typical breakdown of a nuclear plant or a coal-fired plant if you so desire.

Mr. Charlton: I would like to see that, but I would also like to see, for example, transmission costs and how transmission costs are impacted by distance. My understanding is that there are certain inefficiencies over distance in terms of transmission line losses and so on.

Mr. McConnell: Yes. We do not have any packaged presentation on that, but we certainly have fundamental information about how much the energy losses are per kilometre for a 500-kilovolt line of a certain amperage and so on. We could certainly get information in response to any such questions. If you want a presentation on that, we would be most pleased to do it.

Mr. Charlton: I would certainly like something, yes.

Mr. McConnell: As a supplementary, I will be talking conceptually about transmission aspects and citing generation in the next presentation.

Mr. McConnell: But not in terms of the cost.

Mr. Charlton: What I am getting at is some way of weighing the kind of presentation we just had, which comes to a number of strategy conclusions, which are that we are going to retain large units and multi-unit stations for economy and go the one-unit-commitment route—

Mr. McConnell: That is a fair observation.

Mr. Charlton:—having apparently written off any potential for savings as a result of transmission.

Mr. Snelson: That was one of the plans that was analysed in the representative plans, so there is that analysis behind that.

Mr. Charlton: I understand. What I would like to look at and, I think, what we have to understand is the way in which you reach the conclusions, some of the background stuff that you build up, because it would seem to me that the kinds of statements that are made here are rather absolute and fixed, whereas in my mind I have a picture that should be more flexible than that.

I can envision a circumstance where perhaps the big plant is the right route to go, where it is fairly close to the need. I can also envision in this little brain of mine a situation where the big multi-unit plant is not the right route to go because of the broad nature of the need.

Mr. McConnell: We would be quite happy to make such presentations to the committee if you so desire. In specific response to your latest concern, not including the northwest system, which is lightly interconnected with the primary Ontario Hydro system, it would not matter where in our system we located a large plant. What we are basically saying is that the unit sizes and the plant sizes are relatively small compared with the system size. Whether we locate them in northern, southern, eastern or western Ontario, they would still be small, in our vocabulary, compared with the system size.

Mr. Charlton: What I am getting at is, if you have a demand growth that is all happening in one part of the province, then it is easy for a mind like mine to envision that if there is enough demand for the kinds of units you are setting out here, which are 500- to 1,000-megawatt units in multi-unit stations—ultimately, they are going to end up all in one place; I can understand that.

On the other hand, if you have a pretty uniform growth of demand right across the whole system, which means at some point upgrading transmission right across the whole grid to get a large single multi-unit plant transmission to the whole province, then I have a little more difficulty comprehending that in this simplistic fashion.

Mr. McConnell: Conceptually, I will be dealing with that in the next presentation in terms of trying to maintain a balance of generation and load in the larger regions of the province.

In terms of multi-unit, large-unit stations, the balance would be in making sure that we do not put too many large stations in one area of the province, because that would certainly exacerbate the transmission problems. As long as we keep a reasonable balance throughout the province, when the existing bulk transmission system is built and under construction, once we get the boost lines into place, etc., we will be basically strong enough to cope with the sort of thing you are talking about, provided we maintain a reasonable balance in the major areas.

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Mr. Charlton: We will obviously have to come back to this. Perhaps I can listen to your conceptual presentations and then go at it again.

Mr. Richmond: In your background analysis, let's say the representative plans or other technical studies, does Hydro have any assessment—I am not saying you are committed to doing this—at your existing multi-unit stations where a certain design has been made possibly to accommodate an addition of units at those stations in the future? When you built these stations, be it Nanticoke or even the nuclear stations or some of the hydraulic stations, was there ever any thought of putting certain things in so that if you ever wanted to go that route, you could add a unit?

Mr. Snelson: In some of our hydraulic plants, very specific provision has been made for additional units. The scheme proposed for the Mattagami River, one of the hydraulic schemes at Smoky Falls, is the key to that. What you have is four hydraulic plants in a series down the river; the water that flows through one flows into the next and so on down the river. Three of those are owned by Ontario Hydro and the fourth one is Smoky Falls, which is owned by Spruce Falls Power and Paper Co. The Spruce Falls plant is much smaller than the Ontario Hydro generating plants in the amount of water it can pass. Consequently, it is the constraint on the operation of the river. The key to that scheme is to obtain the right to develop Smoky Falls, with appropriate compensation to the company, in step with the Ontario Hydro plants.

The rest of the scheme would be to add generating units into the Ontario Hydro plants so as to be able to use the water in a shorter period of time and so as to spill less water during the spring freshet. Provision was made for those additional units when the stations were originally designed and built. There is a hole in the concrete casing of the powerhouse where another unit will fit.

Mr. McConnell: We did have instances in the past where we did, in fact, follow the practice of just committing in pairs. Mr. Snelson has identified here a proposal that we enjoy the economy of four-unit stations but that, in order to avoid overcommitment, we consider committing in pairs.

The Pickering A station was committed in pairs: Pickering 1 and 2 were committed in 1964, and then in 1967 the last two units were committed. The Lakeview station tended to be committed, I believe, in pairs. But then we went into a period in the late 1960s and during the 1970s in which we tended to commit four units at a time. We are talking here of having the option of making relatively small commitments by just

committing two at a time, compared with the system size.

If you are talking about a station that has an ultimate plan for four units, there are certain expenditures and arrangements you proceed with when you commit the first two so that it will be cheap to add the remaining two. In a four-unit station, some common facilities are shared by all four units; some common facilities are shared by the pairs of units. There are some physical facilities when you commit two units that are being provided for the next pair.

Mrs. Sullivan: You have just finished answering one of the questions I was going to put.

The other question relates to bringing required supply on stream. If you do begin the first two, you are working on the first pair and it becomes clear that indeed the 3,200 megawatts that have been forecast as the next requirement for 2008 are in fact necessary, and two units supply only a portion of that, what is the lead time, after the base units and the common facilities and so on have been put in, for bringing the second two units into the system?

Mr. McConnell: Your question, if I understand you correctly is, let's suppose that you commit two units. In order to qualify your question, I would have to ask, "At what stage of construction are the first two units?" Let's suppose, for example, that the first two units were half built. In other words, I am sort of specifying your question a little bit more precisely.

In that particular case I would think that we could probably not, including approval time, bring another pair of units on in five years. But let me check that. Is that about right? About five years, not counting approval time. But the approval time could be as long as it took us to build. That is one of those question marks that we were talking about a while ago.

Mr. Chairman: Would the committee like to move on to the next subject, or would they like to pick up tomorrow morning? Do I take that as agreement? Mr. Charlton has left for the moment. I think the next one is Mr. McConnach speaking about siting and major generation. Could we proceed?

Mr. McConnach: I will try to be fairly brief with this one so that we can finish on time. I would like to talk about our strategy element 5.4, which, just to remind you, is that "New sites for major generating plant shall be sought to allow generating stations of economic size to be built while maintaining a geographical balance of electricity demand and supply."

I would like to stress that we are talking here about major generating plant of economic size—the large-unit, multi-unit generating stations that Ken Snelson has just been discussing with you with regard to achieving economies of scale. I would like to talk about this under the topics of site capacity, siting considerations and transmission aspects, which Mr. Charlton was interested in, and then sum up.

First, let's look at site capacity. As Ken established with you, an economic size of fossil and nuclear generating station for the Ontario system is four to eight units each with an output capacity in the range of 500 to 1,000 megawatts, so we are talking of total site capacities in the range of 2,000 megawatts to 8,000 megawatts.

The question of how we would go about getting approval for such sites would have to be looked at separately. I am by no means suggesting that we are looking for a site with a capacity of 8,000 megawatts all in one whack. Just to give you a couple of examples of such large multi-unit stations, this first one is our Nanticoke generating station on the north shore of Lake Erie. It comprises eight units, each of 500 megawatts, for a total output capacity of 4,000 megawatts.

This next one is Pickering nuclear generating station, both the A and B stations, just east of Toronto on the north shore of Lake Ontario. That comprises eight nuclear units, each of 500-megawatt capacity, also giving a total output capacity of 4,000 megawatts.

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What are some of the sitings that we need to take into account in choosing a site for such large stations? Obviously these stations cannot be built just anywhere. There are several physical siting considerations. Of course, these are important considerations for any plant, not just these large plants. For example, hydroelectric generating stations must be located where the falling water can best be utilized and where the underlying bedrock can support the facilities.

I guess some of the more major things to be taken into account with large thermal plants are the need for cooling water, the land-use requirement, the transportation access requirement and, last, an important consideration is transmission aspects, which I will come back to later.

Let us look at the first three. At a major fossil station such as Nanticoke or a nuclear generating station, we need large quantities of cooling water. For example, at Nanticoke, when all eight units are operating, we need about nine million litres per minute, or if you prefer gallons, that is

2.4 million gallons per minute. To put it into some sort of perspective, that would fill about 400 average-size backyard swimming pools in one minute, so we are talking a lot of water. The Great Lakes—this is Lake Erie—readily provide for cooling-water requirements as large as these.

The second aspect was land requirements. Adequate space is needed for coal storage, such as at Nanticoke, or oil storage, ash wastes and scrubber wastes. At Nanticoke we have a total area of 320 hectares, and for those of you who have not got the hang of hectares yet, that is about 800 acres, which is about 1.25 sections, a section being one mile square. Even that will be inadequate for Nanticoke, to meet all space requirements over the life of this plant.

Again, to give you some idea of size, from the back of the coal pile to the front gate of the plant is roughly the distance between Yonge Street and Bathurst Street in Toronto. That may help those of you who are familiar with Toronto.

The third thing I talked about was transportation access. That can also be an important aspect, both from the point of view of constructing the plant and delivering large items of equipment such as boilers. I understand from the plant manager at Nanticoke that we could take our 620 University Avenue building and lose it inside one of the boilers at Nanticoke, so we are talking some pretty big equipment.

The other major aspect of transportation is the large quantity of fuel required to fuel the plant during its operation. Obviously, again the Great Lakes provide a very low cost transportation system for both those aspects. In fact, at Nanticoke we have our own wharf for the delivery of the coal.

I mentioned the fourth requirement of the transmission aspects. That is a very important consideration and I would like to discuss that next. We have heard and discussed that siting of major generating stations is closely linked to bulk transmission system aspects and costs. I think two important considerations are the connection of the plant to the existing system and the overall interregional bulk transmission system in the province.

Just to bring in a little analogy here, we could relate that to the transportation system and the development of a new town somewhere in the province and its associated transportation needs. If that town were sited close to existing road, rail and air facilities, then the costs of integrating the town into the transportation system would be relatively small. However, if we site the town in some very remote area away from the existing

transportation system, we may need new roads and an airport, and we may also possibly want to put in a rail link. Obviously, that would greatly increase the cost of integrating that town.

Similarly, with our generation, if we site the generation close to the existing system, then the transmission connections will be shorter, the cost for that will be smaller and the environmental impact will be smaller. Obviously, tradeoffs must be made between the site requirements for the generation station itself, the costs related to that and the transmission cost.

Turning now to the interregional transmission, the major regions of the province are interconnected with long-distance, bulk-transmission lines, and these provide advantages to our consumers in terms of economy and reliability of operation of the system. As an example, the 500,000-volt lines which interconnect southern Ontario with northern Ontario permit the peaking hydraulic capacity in the north to be used to meet some of our peak daily demand in the south at the peak time of the day. At other times of the day, these same lines permit some of the demand in the north to be provided from low-cost, base-load generation in the south.

If we continued our analogy with the transportation system, if everyone lived in one area of the province and all the industries, business offices, governments agencies, services, all the places where people work and get services were located in another general area of the province, then I think it does not take too much imagination to come to the conclusion that there could be a lot of transportation problems and chaos at rush hours, etc., even worse than they are today getting into Toronto. That would be very inefficient to society as a whole.

Of course, there must be some flexibility for people to move about from one area to another, but that needs to be kept within reason. It is essentially the same sort of thing with our intermediate regional transmission system. We want to maintain a reasonable balance between the peak demand and installed generating capacity in the major regions of the province, to ensure the best interests of our consumers in terms of the economy and reliability of the system.

As an example of that, which has already been raised, the Little Jackfish hydroelectric development located in northwestern Ontario, sometimes referred to as our west system, was proposed as giving priority to that site in our hydraulic program because it does defer the need for additional transmission between our east and west systems.

Just to sum up, maintaining a reasonable balance between peak demand and installed capacity in the major regions of the province provides reliability and cost advantages to the electricity consumers of Ontario. Maintaining such a reasonable balance thus minimizes the cost and environmental impact of bulk transmission. When major new supply is required, new sites should be sought to maintain this reasonable balance.

Mrs. Sullivan: My question is a general one, a conceptual one relating to the whole DSPS paper and the discussions. Mr. Charlton asked something of a similar question earlier, and I asked a question earlier in the morning. The more we go through these discussions, the less I can understand why transmission was not included as part of the strategic study, as part of the supply option, as part of the demand option. It seems to be there as an add-on, as an additional factor, but I see it being integral in terms of the reliability of supply, the quality of supply, the technical feasibility, customer cost, avoided-cost questions, siting of plants and economic effect in Ontario.

It seems to be there all the way through each one of the chapters that we have been speaking to. Yet supply and demand are part of the base strategy rather than delivery being an integral part of the strategy. I really feel I am back where I was four days ago.

1800

Mr. McConnell: I do not know that you would have it handy there, but we made the presentation in chapter 1. That was presentation 1B. I had made a presentation to you on a chart that is in the book there. In that, we did include in the demand/supply options study a specification that we were talking about generation and we were talking about alternatives to generation and more specifically, that was purchasing and demand management of consumption.

We also specified that our study embraced transmission that was associated with the generation. It was in that opening comment—that our demand/supply options study did include the transmission that had to do with the incorporation of the generation into the system.

That was all the way through our study. It is included in our representative plan analysis. It is included in our strategy so long as it was dealing with the integration of generation. But if we were writing a strategy that included all aspects of transmission, then we would have to be talking about a much bigger study.

Mrs. Sullivan: If you are evaluating options for supply, which may include building a new plant in Ontario or a major purchase, what you are saying is that the transmission or delivery factors would be included in your representative plans?

Mr. McConnell: That is correct. They are also included in the incremental cost and the avoided cost. Everywhere that we talk costs, that cost of incorporation or integration—of getting the transmission incorporated—is included in this study.

Mrs. Sullivan: So it is an integral part of the concept of supply?

Mr. McConnell: That is correct, yes. For example, let us suppose that we wanted to meet the power supply needs in southern Ontario and we already had adequate supplies for northwestern Ontario and we were going to buy power from Manitoba, and we were considering that as an option. We would include what we would have to pay Manitoba to wheel it up to the Manitoba-Ontario border. Then we would have to add to that the cost of the transmission that gets it to our marketplace and we would include it in that option.

Similarly, if we were buying power from Quebec, we would have to include the cost of bringing that into our marketplace. So the transmission is included in this study only to the degree that we would have to in order to move the power from its source to where it would be consumed.

Mr. Charlton: I am still not sure that gets at what we are after. Maybe we are not putting it right.

I recall the presentation that Toronto Hydro made to the committee two years ago. You probably recall that, as well. They talked about the basic general demand growth that was going on here in Toronto and said the basic distribution system here in Toronto was fast approaching capacity.

Mr. McConnell: Yes.

Mr. Charlton: I think what we are trying to do is to look at that particular problem, and it was a local problem, in a provincial sense, in the sense of the Ontario grid as a whole and the capacity of that grid over and against a strategy which says that we are just going to continue to build, for whatever proportion of our forecast demand growth that we determine Ontario Hydro is going to have to build supply options for, in the form of centralized, multi-unit plants that are going to continually eat up the capacity of that overall

grid, until we reach the point where there is a major problem in terms of the grid's ability to deliver. That is the point at which there are going to be major costs involved in the next stage of upgrading the grid.

Mr. Snelson: Can I have a shot at that?

Mr. McConnell: Me too.

Mr. Snelson: I think there is a very simple sort of concept here which can help; that is, if you have two areas, and say you are adding 2,000-megawatt plants in each area and you have a 2,000-megawatt transmission line between the two areas, then, as the load grows, you may end up finding that one area is short and one area is surplus by up to one generating plant, and the 2,000-megawatt transmission line is fully loaded to that deficient area.

Now, if you add a 2,000-megawatt generating plant in that deficient area, the loads are again balanced and the load on the transmission line is reduced. As things grow, you may end up adding the next generating plant from the other area. As long as you keep the generating plants balanced between the two general areas, and if the transmission capacity between them is of the order of the size of the additions that you are making, then in a sense you can go on indefinitely doing that, with the same size of transmission between them.

That is a little over-simplified, but that is the concept of maintaining a balance in general regions of the province, and that helps to minimize interregional bulk transmission requirements.

Mr. McConnell: I think basically that if you have a 20,000-megawatt grid that is interconnected, the magnitude of the transmission system will be larger than if you have a 2,000-megawatt grid. The transmission in the grid in fact tends to grow with time, just as the generation grows. That was shown in that conceptual diagram of the bulk electricity system that I presented on the first day.

But when you came back to mention the distribution system, the distribution systems have to be managed independently of the bulk electricity system. They still have to have the capability to deliver the goods to the marketplace.

Mr. Charlton: I understand that. The reason I raised the distribution example was that what the Ontario grid in effect becomes, is the Ontario distribution system into the distribution system of the local utilities. I am assuming that the same

potential, the capacity, exists in the grid as exists for Ontario Hydro.

I go back to the question I raised during the last presentation and repeat a couple of things I said. First of all, I understand the example that Mr. Snelson just gave me, where you are talking about two locations, transmission between the two locations and the ability to add capacity at both ends of that transmission.

Conceptually, that is not where I am trying to go. Conceptually, where I am trying to get my head is we have this whole province of Ontario and we are talking in these hearings and in this planning document about a planning strategy, the direction we are going in the future.

1810

Interjection: Could I have—

Mr. Charlton: Let me finish. We have a package in terms of numbers, which you have defined for us, that says we need just over 3,000 megawatts of new supply option by Ontario Hydro. We are talking, at best, about one multi-unit plant, not two, and we are talking about the entire province. We are talking about power that we have to spread right across the whole package. Yes, there may be a little bit greater demand here and a little bit less there, but the demand growth is going to be happening all over the province.

I do not know what percentage of the total capacity of the grid to handle power, to carry power is presently taken up. If I add unit by unit or all at once, four units at a time—it does not really matter to me—if I continue to add centralized generation that has to then be pumped out across the entire grid as a strategy, because that is the strategy direction—strategy means this is the direction we are going for the future, these are the guidelines we are going to use for the future, this is our approach—that says to me sooner or later the overall grid, the distribution system across the province, reaches capacity. Am I conceptually wrong in understanding that you are going to hit that point sooner or later?

Mr. McConnach: Could I have a go at helping you understand there? To come back to my analogy of the transportation system, you can compare our bulk-transmission lines to the expressways, such as Highway 401 between Toronto and Ottawa. The rest of the subtransmission and distribution is like the local transportation networks. Now, you can have a large population growth in Toronto and Ottawa without the need to build another Highway 401 between Toronto and Ottawa.

Mr. Charlton: Or another Queen Elizabeth Way between here and Hamilton.

Mr. McConnach: Yes, and as Mr. McConnell has explained, obviously there would come a point, maybe far distant in the future, when the population got so large that you might want to increase the capacity of that major expressway system.

Mr. Charlton: It does not take long.

Mr. McConnach: Coming back to our transmission system, as part of the representative plans we looked at the transmission aspects of adding major stations to the system. You talked about adding one major large-unit station to the system. We found that with the existing system in place, and assuming that we complete the transmission out of Bruce and the transmission to Ottawa and eastern Ontario, we could basically put a large station anywhere in the province without the need to increase that interregional bulk-transmission capability, excluding the northwest system, as Mr. McConnell has said.

Mr. McConnell: I think the point you are making is a valid concern. In some instances, when you add a new generating station, you relieve the transmission problem. If you think of the whole province, you have generating stations like Lennox, Darlington, Pickering, and so on located in one location, you might want to move that power somewhere else. When you build the other generating station, you locate it and help to redistribute the balance, you may in fact be cutting down on the interregional flows.

In any event, we are not talking about generating stations here that are large in the context of the system. I think the point that Mr. Snelson was making was, if we build a Darlington station, for example, it is 10 per cent of the system, it is not 50 per cent or 75 per cent. Mr. McConnach was saying that, other things being equal, we have a planning system preference to distribute those stations geographically around the province. There are advantages if we can keep those distributed, not all in one place.

One of the reasons that systems like Quebec Hydro have such great reliability problems is that where you have an all-hydro system, you may find you have all the generation in one spot and then you have to move that power several hundred kilometres to get it where it is consumed. Now you are really vulnerable, because when you upset that transmission line you can easily get into trouble. That is the inherent nature of the Quebec system and one of the reasons we will not interconnect, it is one of the reasons it is not reliable. In our case, we maintain high

reliability intrinsically by having distributed generation.

Mr. Charlton: What is the capacity of the Ontario grid?

Mr. McConnell: The capacity of the Ontario grid today is something in the order of 26,000 megawatts. If you talk about adding another station, you are talking about 3,000 megawatts out of 30,000 megawatts, the 10 per cent sort of thing. If we commit two units at a time, our additions for that particular location would be something like five per cent. I think those were the numbers that Mr. Snelson was talking about.

Mr. Charlton: I guess what I am trying to get at is, when do we reach the point where what you are looking at is not just a major transmission line to get power out of a generating station, but you are looking at a major upgrade of the grid.

Mr. McConnell: The transmission system of Ontario Hydro is under continuous review, with continuing needs for adding new transmission elements to meet the needs of the growing system.

Mr. Charlton: I understand that as well. We have been through all that before. What I am not getting out of this conceptually is when does that review tell you that you are going to have to do a major upgrade of the entire grid, because that is what is going to become very costly?

Mr. Snelson: I think the upgrade of the entire grid never takes place as a single event. It is a question of incremental additions to the places that are most heavily stressed, because all of the system is not stressed equally. By choosing to place generation in the appropriate areas that balance the system, you can make that transmission system last longer. That is what this strategy of maintaining a regional balance is all about.

Mr. Charlton: If that is the case and that is the way the planning process works, then why did we have to go through the southwestern transmission hearings, when we had to not only go through a hearing about locked-in power—and I think I understand why some of that happened. Some of it was political, and we went through that two years ago. But why did we then find ourselves in the position of having to go through a transmission hearing that talked about getting power out of Bruce and Nanticoke into an area that was not anywhere near the generation, where you needed the power, if what you are telling me about the planning process is going to put the power in the right place?

1820

Mr. McConnell: Transmission has three functions. One function is to move the power from the generating stations to the loads. A second function is to incorporate the generation into the grid. The third function is to carry power between neighbouring utilities, for example, an interconnection transmission line from Michigan to Ontario Hydro or from New York to Ontario Hydro or from Manitoba to Ontario Hydro. A transmission line we propose may serve one, two or all three of those functions.

In the case of transmission, the critical consequence at the Bruce station was that we had the generating station but we did not have the incorporating transmission to get it to the grid. It was bottled in there; it could not get out. All that cheap power was costing our customers a bundle of money because we could not get our power.

Mr. Charlton: Let's go back to what Mr. Snelson just said, though, about building the transmission in the appropriate locations. What was it in your planning process that caused you to build the Bruce nuclear station where you built it? To serve what market?

Mr. McConnell: When the Bruce generating station was proposed, there was a simultaneous proposal to build a transmission line. That was in 1974. It has taken us over 14 years, in terms of the processes in Ontario today, to get that approved and built.

Mr. Charlton: Would it have cost you any more to build the Bruce nuclear station at Sarnia?

Mr. McConnell: An option would have been to put the Bruce nuclear station at Sarnia, but the transmission would still have had to be built and the power still would have had to be integrated and incorporated into the grid.

Mr. Charlton: Would transmission have been as costly if you had built the Bruce nuclear station at Darlington with connections to London and Nanticoke and then back into the rest of the grid?

Mr. McConnell: The cost of locating a nuclear station at Sarnia would not have been drastically different, no, but it would not have eliminated the need for transmission.

Mr. Charlton: But it would have dramatically reduced the cost of the required transmission.

Mr. McConnell: I am not at all sure that is the case. The power coming out of Bruce is far in excess of what Sarnia needs so you would still have to move the power to London, Ontario and beyond.

Mr. Charlton: Of course, but Sarnia happens to be quite a bit closer to London than the Bruce nuclear station is.

Mr. McConnell: We have a reasonable balance in that area of the province—

Mr. McConnell: We have at Sarnia the Lambton coal-fired generating station, which is 2,000 megawatts.

Mr. Charlton: Sarnia was just an example I pulled out of my hat.

Mr. McConnell: Yes, I realize that.

Mr. Charlton: What I am saying is that what you are telling me does not seem to be what happens.

Mr. McConnell: We do the studies on the basis of the bulk electricity system, and we consider both the transmission and generation at the time we make the recommendation. Those incorporation costs of transmission are included in our assessments.

Mr. Snelson: Can I just try to put this into perspective a little? We have to be careful not to get the tail wagging the dog. You have to recognize that the bulk of the costs are in the generation. The transmission is a very much smaller part of the cost, in the order of 10 per cent, or 20 per cent at the most. You do the most economical thing overall but, consequently, the tendency is to do the most economical thing from a generation point of view and then choose among things that are very close to that from a generation point to view to try to reduce transmission costs, because that is a smaller part.

Mr. Charlton: I understand that but, for example, in terms of what this committee would like to look at and in terms of what I think Hydro has to look at, it is not a general principle like that. Sure, there are general principles like that, but if the cost of building your one-unit-at-a-time, multi-unit plant presently is 35 per cent cheaper than building a smaller plant closer to the need, and the transmission costs are only 15 per cent in addition to the generation costs, then yes, the general principle works. But the general principle does not work any more, does it, when the difference in the cost between generating in your large, multi-unit plant and transmitting changes?

Mr. McConnell: But the incremental costs of various options do include the transmission. That is why I pointed out the chart at the beginning, where I have it written down that it is included. That is in the presentation in chapter 1 that we presented at the beginning.

Mr. Charlton: We are trying to deal here with the future, though.

Mr. McConnell: I am talking about the future. We do incorporate that incremental cost for the future.

Mr. Charlton: Two years ago, you told us that the future was quite different from what you are telling us this year. I guess what we are trying to get is some better handle on the real future.

As a number of us have said a number of times during these hearings, including the comments I made in response to the president's opening remarks here, there are a number of changes—attitudinal changes, directional changes, program changes, department changes and everything else—that we are happy to see, but the future you are telling us about is substantially different from what you told us the future would be a couple of years ago.

Mr. McConnell: As far as that particular comment is concerned, it is true that the loads have increased considerably more than we told you two years ago in terms of the median forecast, but they did fall within that bandwidth. We did say two years ago that we were doing bandwidth planning, and that is not new. Basically, what we are telling you today is still within that same envelope.

Mr. Charlton: Yes, but there are also a whole lot of other things that have emerged on the table, like presentations before the Ontario Energy Board a few months ago where we were talking about offers for independent generation in the range of 600 megawatts, and in just a few months, we are now close to 900 megawatts. There are things happening that are far different from the kind of mix of options that this committee is going to have to look at and make decisions about, which, ultimately, you are going to have to make decisions about as well.

I guess we just need a better understanding of what at least some of us see as not totally appropriate decisions in the past in terms of the concept of large, centralized generation, its location and its ability to serve the whole province. That does not mean we are right, but at some point we have to come to terms with the feelings and the instincts that we have and the things that we have learned and apply them to this strategic approach to the future.

1830

Mr. McConnell: Anything we can do to help in that regard we would be pleased to do. Any specific information you would like we would be quite willing—

Mr. Charlton: As I suggested earlier, one of the things that would be helpful is some kind of model by which you apply numbers, to get a sense of when a large multi-unit plant in one location and moving the power is the most

efficient way to do things and when you pass the break-even point where that is no longer the most efficient way to do it, so that we can play with some of those kinds of things and conceptually understand what is happening here.

Mr. McConnell: In the representative plans that we analysed and documented, put numbers on and presented to you, we were trying to say to you that the strategy we developed has to accommodate quite a wide band in terms of the uncertainty of the future. Our analysis has indicated that our strategy is robust and is at optimum to handle that full band. That includes the numerical values of the transmission and the generation which were in the representative analysis we presented to you. We did that on a bandwidth analysis, a very wide band.

Mr. Charlton: In very global and general terms, yes.

Mr. Snelson: In the supporting documents it is described in very detailed terms. We did not have time. I am sure you are getting tired of our presentations already; we commend your stamina. In the supporting documents there are detailed descriptions of all the plans and their costs and their implications in terms of environmental and transmission requirements and so on. This was all tracked through. It would be nice to have a simple model. Unfortunately, the system is quite complex and does require a lot of analysis to do the sort of thing you are describing, but we do do that.

Mrs. Sullivan: I know a bit more now than I did five minutes ago. One of the things I want to raise as a result of one of the illustrations you used, Mr. McConnell, is related to the approvals on the Bruce transmission. It struck me that one of the things Hydro has been seeking or has recommended be sought would be joint approvals on both generating and transmissions. Given the last example of the approvals process, is that not dangerous? It may delay the construction of a plant.

Mr. McConnell: If the processes we establish in the future cause a delay in the construction of the plant, I would heartily agree with you that it would not be good.

There are different people sitting in different seats who have different views of their desires, wants and needs in terms of the approval process. Basically, what we are saying is that the two elementary concepts are that somehow or other we have to satisfy the general needs of the public good on the one hand and, at the same time, we also, on behalf of our customers, want to satisfy the best interests of our electrical customers and search for that process. That involves ideas that have to be shared from different views.

But the bottom line is that it is the Legislature and it is the government directing the review process. It is not us. We were attempting to conform to whatever process the Legislature and the government establish and that is what we have been doing.

That means there are opportunities for us to try to work with that system more effectively. At the same time, there is the question: Do we have the optimum process? Whatever we learn as the years go by, there is this question of trying to meet those two requirements: minimizing the costs and providing reliable supply on the one hand and doing justice in terms of environmental review and making those best choices on the other hand.

If we talk about going for an approval, say, of a coal-fired station or a nuclear station or a hydraulic station or a something in one location, people say: "Well, I think what you should do is build another kind of station somewhere else in the province. You don't need to do that here." So you go to the other part of the province and say, "We are proposing to do this here," and they will say, "Why don't you go to that other part of the province?" You can be in a position just like your garbage dumps and you end up like the Canadian post office. Then the message gets home.

Mrs. Grier: I do not get that analogy.

Mr. McConnell: The mail does not get delivered. In this case, the electricity does not get delivered.

Mr. Chairman: I will adjourn the committee until 10 a.m. tomorrow. Not 9:30, but 10 o'clock.

The committee adjourned at 6:38 p.m.

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Snelson, J. Ken, Manager, Demand/Supply Integration

McConnach, Jim S., Assistant to the Director of System Planning



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Hansard

Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy

Electricity Demand and Supply



First Session, 34th Parliament

Thursday, August 11, 1988

Speaker: Honourable Hugh A. Edighoffer
Clerk of the House: Claude L. DesRosiers

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Contents of the proceedings reported in this issue of Hansard appears at the back, together with a list of the members of the committee and other members and witnesses taking part.

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Thursday, August 11, 1988

The committee met at 10:07 a.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY (continued)

Mr. Chairman: Could I call the morning session to order, please. Perhaps everyone could take their seats and we can pick up where we left off last night. Mr. McConnell, do you have any comments you would like to start with?

ONTARIO HYDRO

Mr. McConnell: Yes, I have a comment to make with regard to the issue of the so-called greenhouse effect.

I would like to acknowledge that in the development of our strategy, we would have to acknowledge to this committee that we did not do an extensive analysis considering the potential implications in the future of the greenhouse effect. At the same time, without having done an awful lot of analysis, I think our strategy is fairly robust. I am certainly not motivated to change the strategy we have submitted to you based upon the greenhouse effect, but at the same time, I can see that it does have very major potential implications to the practical application of the strategy in the future.

Earlier on last week, we did offer to make a presentation to you, but there are people who are more expert on the greenhouse effect than we in Ontario Hydro. Although I do not know your specific plans at the moment with regard to whether you are going to have Dr. Hare here to talk about the Ontario Nuclear Safety Review, I regard Dr. Hare as much more expert in the greenhouse effect than the nuclear field, although he certainly is qualified in both areas. I thought I should mention that to you.

The practical reason for considering this is that some 90 per cent of the carbon dioxide that is being emitted into the atmosphere and that represents this global threat in fact comes from industrialized countries, not the underdeveloped countries, so the United Nations actions and the various actions that are in their early stages with regard to the world grappling with this emerging issue clearly fall into the bailiwick of the developed countries, the advanced, industrial countries. In other words, we are the problem.

The early proposals that are being put forward are to cut down the CO₂ emissions in this world globally. The early suggestions are to cut it by a factor of two in the time frame of 15 years.

I think you probably appreciate that an awful lot of this CO₂ comes from oil, gas and coal. The merits of demand management are reinforced by this concern, so I think our strategy is quite consistent with that as a requirement. At the same time, I think you are going to see mounting pressures throughout the entire world for intensifying the nuclear option as the only other major viable alternative for substituting for the CO₂ emissions from fossil fuels. It has very major implications.

My suggestion is not to take our word for it, but perhaps consider having some people in who would talk to you about this issue and perhaps give you some insight. But we are quite prepared, independently, to talk to you about what we see coming down the road as the practical application of our strategy if that should be a major emerging issue.

I look upon the scarcity of gas and oil in the long term in the next century, together with the greenhouse effect, as being the two major things all industrial nations are going to be faced with. We could well find ourselves in a situation of not managing peaking capacity, but managing where we get our energy from.

I just wanted to make those comments for you to consider in your deliberations later on.

Mr. Chairman: As a committee, we had indeed noted the dual expertise of Dr. Hare in that matter. We will have to see what we do. Perhaps we could proceed, then.

Mr. McConnell: Our next presentation is by Art Marriage. He will talk about some of the challenges we have in dealing with our existing plant, of which a considerable part is getting quite old.

Mr. Marriage: As Lorne McConnell has said, my presentation will deal with getting the most effective use out of our existing supply facilities. I would like to go back to Lorne's earlier presentation on introducing the strategies. This is one of the priority directions in terms of the strategic direction.

I would also like to indicate my appreciation and understanding of both Mrs. Sullivan's and Mr. Charlton's concerns about transmission. Although my presentation will be dealing with the generating plant, I feel these strategies equally apply to transmission and distribution as well.

My presentation will cover three strategy elements dealing with (1) maintenance and improvements, (2) rehabilitation or redevelopment, and (3) the preservation of old plant for contingency use.

I would first like to remind you of the three strategy statements by restating them.

Strategy element 5.5.1 states, "A high priority should be given to maintaining and improving the performance of the existing supply facilities."

Strategy element 5.5.2 states, "Rehabilitation or redevelopment of existing facilities should be assessed along with other demand and supply options."

Strategy 5.5.3 states, "To provide a flexibility margin, consideration should be given to retaining in a preserved state existing plant that has reached the end of its useful life."

I will now proceed to give you the rationale for those elements.

I do not think I need dwell too much on my earlier presentation on the existing system, and of course the appeals we had on Thursday and Friday, that basically we are using pretty well all of our system now and that by 1992, with the completion of Darlington, the capability to meet the load reliably will be very close to our forecast peak under median conditions, without demand management.

Looking ahead to the end of our 20-year planning period, the winter of 2008-09, we have a forecast peak load under median conditions of some 35,000 megawatts, and as you can see our existing and committed system with Darlington would meet about 75 per cent of that demand. I must emphasize, though, that we plan on a bandwidth forecast, not a single-point forecast, so that our existing system, under a low load growth, could likely meet all of the requirement, but under a higher load growth, of course would meet a lot less than 75 per cent.

The bottom line really is that our existing system will be the backbone of the supply for this province's future electricity needs well into the next century. Again, I would just emphasize that this also applies to our transmission and distribution systems, which date back to 1906.

I would now like to review some of the threats to meeting our future requirements from our existing plant into the next century. The first one is that the reliability of the system, and therefore the reliability of supply to our customers, will deteriorate with more frequent and longer outages, unless we have an adequate and ongoing maintenance program, and of course, there is the effect of ageing of the facilities. We have already heard in previous presentations on reliability and the customer surveys that reliability is a high value in terms of our customers, especially the industrial and commercial customers.

I would like to say a few words on ageing as well. In Mr. McConnell's opening presentation, he indicated that at the end of this 20-year time period, around 2008, we will be looking at an average of possibly 600 megawatts a year of capacity that could have to be replaced or rehabilitated due to the ageing of the facilities that have been put in place over time.

I would also like to make a comment on Mr. Brown's comments yesterday in terms of the demand management. Not only are we looking at meeting a load growth of around 600 megawatts a year, but on top of that we could be faced with another 600 megawatts a year to replace our existing plant. Clearly, I do not think demand management could do all that.

The environmental restrictions could limit the output of some of our plant as it gets older and also could force some of it out of operation. Some examples are the acid gas emissions and the CO₂, which Mr. McConnell has just mentioned. Also, water-level restrictions could reduce the capacity and energy output from hydraulic plants.

1020

Likewise, as the facilities get older, technological obsolescence could reduce the output from our plant or even force some of it out of service. There are a couple of reasons. One is availability of parts for the older equipment. There is also the higher cost of keeping some of this equipment running. All of these things can lead to a potential loss of capacity that will reduce the amount of flexibility Ontario Hydro has to meet increasing demand, and it will advance the need for new demand management or supply options.

Again, and Ken Snelson touched on this yesterday in his presentation on supply in general, the premature loss of the Lakeview coal-fired plant in Mississauga, of 2,400 megawatts, which will be 30 years old by 1996, could advance the need date by roughly three years.

Now I would like to move through the strategy elements. The first one is maintenance. One way to get the best use out of our existing facilities is through proper and adequate maintenance and minor improvements. The more frequently equipment is forced out of service and the longer it remains out of service, of course, results in higher costs for the system and the customer, a lower reliability and advancing the need for new facilities. As I have noted, the ageing system will require additional outages to repair and fix up the equipment.

I would like to give a few examples, and I would stress that these are only examples, in terms of some fairly rough calculations. In trying to give you a feeling for just how much these outages could cost, I have also assumed that hydraulic and nuclear energy would be replaced with coal-fired energy. That may not be true all the time, but I think this will give you a sense of the numbers.

Looking again at hydraulic, if we take 100 megawatts of hydraulic capacity and assume that it is out for two weeks, for whatever reason, and that hydraulic capacity could have produced 17,000 megawatt-hours over that two-week period, replacing that with coal-fired energy would cost \$400,000.

Likewise, and we have talked about this in earlier presentations, there is a requirement to have a reserve margin to provide for outages on the system, but if we get much longer and more frequent outages, that will increase the reserve margin and increase the need for additional capacity.

If we look at 100 megawatts of base-loaded, energy-producing capacity, again in terms of possibly the hydraulic, to replace that in today's dollars could cost us \$100 million to \$300 million in terms of the dollars per kilowatt for capacity of coal, hydraulic or nuclear generation.

I would now like to turn to improvements in terms of adding or changing the facilities to improve either the efficiency of the facility or to get more capacity out of the existing facilities. Unfortunately, Mrs. Grier is not here this morning, because she raised this point last Thursday. I would like to say that Ontario Hydro always has and will continue to look for the opportunities to improve the efficiency of its plants or to gain more capacity from its existing plants.

I would like to give a couple of examples. We have over the past 14 years, through some minor modifications to some of our hydraulic units, gained another 180 megawatts from our hydrau-

lic system. Again, looking at it in terms of the energy, if it had to be generated from coal plants instead of the hydraulic, this is saving us \$7 million a year. These modifications have more than paid for themselves twice over already in terms of the energy savings.

Also, looking at the nuclear, we are in the process of increasing the capacity of the Bruce A units, which would give us an additional 400 megawatts at Bruce. Again, if that energy was generated from coal plant versus the nuclear plant, we are looking at a savings of \$50 million a year as opposed to generating from coal. The cost is estimated to be between \$15 million and \$20 million. Now I do appreciate the fact that we are not going to gain all of these savings until we get the full transmission out of Bruce, but as units come up and go down, we are still able to get some of that additional capacity and energy from this upgrade out of the Bruce complex.

These improvements, as I have indicated, provide additional capacity from low-cost hydraulic and nuclear generation and therefore lower our production and operating costs. They can also delay the installation of new facilities. We are looking here at 600 megawatts, which is equivalent to about one year under our median forecast. The improvements in terms of newer and more efficient equipment can also avoid the reductions or the shutdown of some of our capacity.

With the ageing of the system and these types of benefits, we have initiated a number of programs which we call life assurance programs on the generation, the transmission and the station facilities, looking at inspecting the equipment, testing some of the equipment in terms of the ageing effects and developing plans to upgrade the equipment.

Again, going back to some of Mr. Charlton's discussions yesterday, this will not be a crash program. We will be looking at augmenting the transmission in terms of possibly larger conductors or higher voltages to minimize the number of new rights of way and make maximum use of our existing rights of way.

Also, the Pickering retubing and other work on the pressure tubes is another example of our life assurance program to make sure the equipment we have will last for the assumed operating life.

Now I would like to move to rehabilitation and redevelopment. Again, this is another way to maximize the use of our existing facilities through either the life extension of a plant beyond its assumed operating life or the redevelopment of a site.

First of all, rehabilitation is different from the ongoing maintenance in that what we are looking at here is a major upgrade or replacement of equipment in one time period, and possibly significant increases in capacity and/or a change in the fuel source.

As it ages, of course, the power system will require rehabilitation or redevelopment. Our strategy 5.5.2 indicates that we will be looking at this as an alternative to other options.

The advantages of this are the lower costs, the much shorter lead times and the use of the existing resources, whether they be the water, the land, the transmission lines, the buildings or the rights of way.

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Again, through this program of rehabilitation, we will continue to look for the opportunity to increase the output of the plants, to increase the efficiency and also to improve the environmental impact through newer and more efficient components.

Along that line, we have taken on a number of initiatives in terms of studies to examine the costs and benefits of rehabilitating or redeveloping a number of our ageing facilities. As we have already mentioned, we are looking at another plant on the Niagara River to replace one of our older plants, Ontario Power, and also to maximize the use of the existing water there. This could give us possibly 700 additional megawatts. As I also mentioned, we are looking at the rehabilitation of the Lakeview plant, which is 2,400 megawatts.

We have already submitted a program of environmental assessment for the installation of emission controls on our major coal-fuelled stations.

The last element I will be dealing with is the preservation of old plant. Again, this is another example of ways to maximize the use of our existing facilities.

When the facilities reach a point where their continued operation is not acceptable and rehabilitation or redevelopment is not economic, they get taken out of service and replaced with newer facilities. When these facilities are no longer needed, we could, if we knew the future with certainty, decommission and dismantle these facilities.

However, as you heard in Ken Snelson's presentation on Tuesday, 11.2C, on strategy elements 2.2.1 and 2.2.2, we are looking at the uncertainty and the need to develop contingency plans to meet that uncertainty. One of these contingency plans is to mothball—we call it

mothballing, preserving the plant in a state that we can bring it back into service—to meet these future uncertainties.

The mothballing provides us with flexibility in terms of the shorter lead time to recommission a plant and bring it back into service as opposed to getting approvals and constructing a new plant. It is a very low-cost option in terms of just keeping it in a mothballed state. It can be a lower option in terms of what is available in a short lead-time situation. Even if it has high fuelling costs, if it is not going to be operated too many times, it is still likely a cheaper option than something else. In some cases, it may be the only option we have under some short-term situations.

I would like to just give you a couple of examples of the benefits of the mothballed generating plant in terms of its flexibility to meet increased demand or a cheap insurance against future uncertainties.

As we indicated earlier, we have brought Lennox units back from a mothballed state, although these units were not mothballed because of age; they were mothballed because of the high cost of generating on oil. Through the 1987-88 winter, we brought two units back, 550 megawatts each, 1,100 megawatts in seven months. I think that is quite a feat in itself, to get 1,100 megawatts on to the system in seven months.

We are bringing another unit back in service for this winter; again, another 550 megawatts in something like six or seven months. It is tremendous flexibility. Certainly, you could not do that even with purchasing combustion turbines. Looking at the Hearn and Keith stations, we have the 1,200-megawatt Hearn station in Toronto and a 250-megawatt station, Keith, in Windsor. Both of these are still currently in a mothballed state.

The cost of keeping them mothballed is roughly \$1 million per year. If we had to replace that capacity in 1,450 megawatts, and just looking at combustion turbines which is the shortest lead time option, to purchase them and to put them into place, connecting them into the system could be a cost of up to \$1 billion compared to the \$1 million a year. I feel that is very cheap insurance in terms of the future uncertainties.

One of the other advantages we have in terms of Hearn which can run on gas is that it is also a contingency measure in terms of acid gas emissions. If we have restrictions on our coal-fired plant, we can run 1,200 megawatts of gas-fired generation there.

In summary, the existing and committed system is going to be the backbone of our supply into the next century. The strategy statement 5.5.1 calls for us to give a high priority to the maintenance and improvements of our existing facilities. This will reduce costs, maintain and improve the reliability and defer new options.

The strategy statement 5.5.2 calls for us to consider rehabilitation and/or redevelopment along with other options in terms of demand management and supply when looking at the need and timing for new facilities. The improvements and the rehabilitation will also avoid capacity reductions and premature shutdowns by replacing the equipment with more efficient and newer equipment.

Finally, the last strategy statement, 5.5.3, is that we will be preserving our high-cost and older inefficient plant as a low-cost insurance for the flexibility needed by the system to deal with future uncertainties.

Mrs. Marland: I notice at one point in your rehabilitation/redevelopment figure, 11.5E-7, when you are talking about the opportunity, I am very happy that you list "improve environmental impacts." Naturally, I am saying that as Environment critic for our caucus.

But I also notice earlier, when you talk about what the threats are to the existing facilities, environmental restrictions are there. You are saying that water levels could be a problem. If we continue with the greenhouse effect and the kind of weather that we have had in the last two months, we know what will be happening to our water levels around the province.

I am sorry that you have to make the statement that acid gas and CO₂ emissions are a limiting factor. I guess what you are doing is stating a fact, but I am wondering whether that is up in the psyche of Hydro? On the one hand you, are saying that you want to reduce the environmental impact which is, in all good conscience, what we want to hear. But then you say that those environmental restrictions will be a threat to the existing facilities. I wonder if you could elaborate a little on that.

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Mr. Marriage: Yes. Thank you for your comments. The threat is really the threat to operating those plants in terms of getting out their full capability. Clearly, the acid gas and CO₂ limits are going to restrict the operation of our coal-fired plant. What we are doing is looking at ways to meet those regulations and still be able to operate the plant, through scrubbers or other techniques, in terms of reducing the emissions.

Unfortunately, as you will get into in discussions later on, the CO₂ of course comes from burning any fossil fuels. That may be very difficult to eliminate and could result in restricting the operation of our fossil plants.

Mrs. Marland: Unfortunately, I am not able to be here every day, because I am subbing on this committee and I have other committee obligations. I am sorry to miss the gaps in between. The fact is you have a tremendous responsibility, you as Hydro, because you are planning for the needs for electricity. There is nothing more basic, I guess, after our food and shelter; it is a matter of life that we need electricity, whether it is in the hospitals or the operating rooms or whether it is people who rely on electricity in their homes for life-sustaining equipment, apart from the comforts of electricity for air-conditioning and heating.

Having said that and realizing where it is that Hydro has to look into the future, the balance of responsibility between this provision of supply and meeting of demands and the responsibility to the environment is still one where I feel the public is now at the point that it is willing to face or share with you those costs.

By the way, I must tell you that when I see technological obsolescence here as a threat, I wonder, in speaking of obsolescence, if Hydro ever thought about changing its name, since really, currently, it is not an appropriate name. I do not know why we do not call it Ontario Electricity Corp. because it is a tripartite generation and the hydro is only one area, is it not?

Mr. Marriage: Yes.

Mrs. Marland: With regard to the premature loss of Lakeview, naturally, with its being in my riding, I am interested in that. You say that it is going to be 30 years old by 1996, which the people in my community will attest to. Further down, you talk about rehabilitating Lakeview. Is that rehabilitation before or after 1996, and is there a possibility that in 1996 you will not have to worry about the environmental restrictions on Lakeview because it will have reached its life expectancy?

Mr. Marriage: Right now, we are looking at carrying out the work between 1990 and 1993, or in that area. We need to carry out the work before 1996, because by 1996 we will start needing that plant more heavily because of the demand increase. As part of that, we are reviewing a number of options, and of course also the environmental improvements that could be made.

Mrs. Marland: So 1996 is not a special anniversary for Lakeview. It just means that it is going to go on being used and you are going to modify it to meet the environmental restrictions?

Mr. Marriage: Right now, it is just based on what the assumed operating life has been for that plant, but clearly we want to get the plant fixed up during a period when we have low demand on our fossil system, between 1990 and 1993.

Mr. McConnell: Mrs. Marland, in a coal-fired station such as Lakeview, which operates at very high pressures and temperatures, the operating conditions represent a very severe operating condition in terms of the physical deterioration of the components. During the last two years or so, we have done a very careful review to ascertain the physical condition of Lakeview. The Lakeview generating station at the present time has suffered very seriously in terms of the components.

At the same time, because of the very rapid growth in power demands during the last five years, which have been the highest in Ontario Hydro's history since its beginning, we found ourselves in the situation that the Lakeview capacity is absolutely vital to meeting the power supply needs of Ontario Hydro during the 1990s. We have no choice but to rehabilitate it, fix it up and make sure it will perform well during the 1990s.

Mr. Marriage was also saying that we have a study under way at the present time and there is an option as to whether we fix the plant up so that we have what we call life extension, in other words, whether it would be used on into the next century, or whether it would be better to put Lakeview in a mothballed state and use it for flexibility. Certainly, our intent is to fix Lakeview up in the early 1990s—that will be costly—and utilize it during that whole decade.

Mrs. Marland: In the overall picture in the province, your environmental program for emission control in all those coal-fired units, what do you see as the overall time frame for them, knowing that it takes up to three years to put scrubbers in place—if that is the technique you are going to use—to go through the environmental assessment process, the hearings and so forth? Where do you see the picture in the time frame for all of those coal-fired units throughout the province? We started to touch on this a little, but we did not get the final answer last week.

Also, on meeting the emission controls for Lakeview, are those just the ones we have agreed to now by 1994 or are you planning to do something better for Lakeview?

Mr. McConnell: The emission controls for acid gas emissions are province-wide. This basically means that prior to 1987, before provincial restraints were created, Ontario Hydro had reduced its acid gas emissions on its own and then these additional restraints were imposed on acid gas emissions by the provincial government; they constitute a further reduction. About half of our reductions were achieved prior to these restraints and the other half during this restraint period.

We have offered to make a presentation to the select committee on the acid gas program, because it is not easy to take a complicated question like the one you are asking and give the answer in one simple sentence.

Our total acid gas program will meet the acid gas emission limits which have been developed by the province and we will be meeting that by a combination of things. Part of it has to do with burning lower-sulphur coal, part of it has to do with alternatives that do not emit acid gas at all, and part of it has to do with flue-gas desulphurization. The scrubbers we are talking about adding will be favoured to be added first to stations like Lambton and Nanticoke, where we would run Lakeview to meet peaking requirements and emissions there would be much more severely restrained.

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Mrs. Marland: I have just one final question. It is interesting to hear your offer again. I heard you make that offer last week about the special presentation, and I do not know whether the committee has decided about that or not, but Mrs. Grier and I were both members of the select committee on the environment in 1986.

One of the recommendations and therefore the unanimous wish of that committee—an all-party committee, obviously—was that we have a report from Hydro as to what its proposed plan was as to how it was going to meet the emission controls on all the coal-fired thermal units around the province by 1994, knowing that some of the methods of control take a lot of time for emplacement, and also a lot of money. Unfortunately, although that was a recommendation, we have not heard any more about what happened with that recommendation, nor have we been blessed with the reinstatement of the select committee on the environment, which could narrow in specifically on that, which is, I know, a wish of Mrs. Grier and myself.

The last question I have is that you were talking about improved hydro output. That is on your 11.5E.6. I am wondering how you do that

with the earlier identified risks you have outlined about the water levels being a problem. How do you improve the hydro output when you have that hovering over you?

Mr. Penn: The water-levels problem exists only during certain parts of the year, and we are spilling water, particularly at the spring freshet, at some stations. We have water turbine efficiencies that are associated with old plant that can be improved, and it is through those means that we are improving our hydraulic output.

Mrs. Marland: Earlier, when you said water levels might be a problem, what you were really saying is that it is only in certain parts of the province. Is that it? Did you not identify water levels as being a problem?

Mr. Marriage: That is true. That could affect certain plants, depending on whether it is navigation or recreation or erosion control or whatever the other competing use is for the water. As Mr. Penn said, what we are looking at is changing some of the turbines and some of the other facilities in plants now that can produce more energy and more megawatts within the existing regulations and requirements.

Mr. McConnell: What we are trying to do here is to get across a conceptual component of our strategy, that we do not want to lose opportunities in order to meet our future requirements. Part of those opportunities is to get more out of what we have, and that is basically what we meant here by improving efficiency and increasing output.

Specifically in the hydraulic area, we recognized in 1974 that there was an opportunity to squeeze out some more megawatts and some more kilowatt-hours out of the hydraulic plant. We started a program in 1974 that has been under way for some 14 years now, and that was not a theoretical program, it turned out to be very valuable and very real.

All of the runners, that is, the moving components inside of the hydraulic turbines, that were designed prior to 1962, and that applies to a very high percentage of them, were not as efficient from an engineering point of view as the ones from then on. We essentially have replaced a lot of those runners and, on that basis, are able to get more megawatts.

On page 11, we have indicated that by replacing those parts we have increased the capacity by 180 megawatts, and that has already resulted in a net savings to our customers of \$7 million a year. That is an example of the strategy, and we would continue to exploit those opportunities, whether it be with hydro, coal or nuclear.

Mr. Penn: If I may, Mrs. Marland referred, in an earlier comment, to the fact that the select committee on the environment was seeking a report from Ontario Hydro. Indeed, the government requested Ontario Hydro to discuss the best methods of meeting acid emission regulations. We are intending to do that and we are doing it.

You also mentioned about the timing of possible scrubber facilities being added to our plants. We believe, on the medium load growth, that this will most likely be necessary. Our present planning, based upon the submission of a program environmental assessment on four different technologies at three different locations in the province, is to seek approval to have the first scrubbers in service in 1994.

Mr. McGuigan: I have a comment, and Mrs. Marland may have answered it while I was out, on the acid gas scrubbers. Do they themselves limit the output of the unit or do they take power to operate, are they a cost other than just the capital cost?

Mr. Penn: Yes, there is a requirement by the facility itself to operate it, so it does use useful power from the generating station.

Mr. McGuigan: A significant amount?

Mr. Penn: No, it is small. It is of the order of one per cent or two per cent of the output.

Mr. McConnell: The cost components include the capital cost of installing the scrubbers; the operation and maintenance cost of operating those scrubbers, and that is not insignificant; the increase in the unit-energy-cost of electricity, because the number of kilowatts generated is reduced by a small amount, as Mr. Penn has indicated, and a small reduction in the overall energy efficiency as well. Those of course are all taken into account, and we attempt to optimize the capital investment with those adverse effects on efficiency and power.

Mr. McGuigan: Someone had told me in the past that they had a high power requirement, but your answer to that is that it is not significant.

Mr. Penn: That is correct.

Mr. McGuigan: I am certainly not an expert on boilers and generators, but at Lakeview would it not be the case that there are several furnaces and boilers, that you do not have just a single boiler or furnace?

Mr. McConnell: At Lakeview there are eight.

Mr. McGuigan: It strikes me that if you replaced those one at a time, were that possible, then there should not really be a big risk of a downturn in your outage, as far as that plant is

concerned, when and if you decide to upgrade that at the end of this 35-year period. I come from operating trucks and tractors. You throw a new motor in it and keep it running, and there is not a great, significant cost or a great downturn. I am wondering why you cannot just throw a new boiler in and have things go on without too much interruption.

1100

Mr. Snelson: To a large extent, you are correct. Our plan is to do two units a year over four years, to spread it out. So that would not take the whole plant out at once. We would like to get that program finished, though, before the requirement of coal-fired generation starts to increase as Darlington is finished and there is no more new nuclear generation coming on to meet load.

As regards the boilers, they are very substantial structures. I was down at the Lakeview plant just a month or so ago. The height of a boiler is something like the height of a six or seven-storey building, maybe even higher; 200 or 300 feet was the figure. Certainly, you did not want to look down when you were on the top, because they were mighty big.

Mr. Penn: I would like to add a comment, as my group is reviewing how best to renovate and how to do it from a practical point of view. The renovation could be extensive. We are looking to do the work during the late spring, summer and early fall periods and have the unit returned to service for the winter load. Whether we can accomplish that is not clear yet, but that is our objective.

Mr. McConnell: The window of opportunity to fix up Lakeview is in a very short time interval, from when we just finish Darlington until about 1994-95. Then we urgently need that power for the remainder of the next decade. As Mr. Penn has indicated, we really would prefer to be able to make those changes during the summertime when the peaks are down, the loads are down. That is just one of several things that we face in the early 1990s in terms of our operating very close to the vest, not being short but being tight. That is assuming that the load does not continue to track like it has in the past three or four years. If that happens, we will really be in much more difficult circumstances.

Mr. McGuigan: At 35 years of age, I am assuming the life of the metal is deteriorating, and you are facing major leaks in the boilers if you do not replace the metal; that they are at the end of their expected life.

Mr. McConnell: Major renovations at Lakeview will have to be made. We already know that.

Mr. Charlton: You gentlemen will be happy to know that I dreamed about the grid last night: little lights flashing along the spiderweb. Several of your faces and your voices kept intruding into my dream.

Mr. Snelson: What was it, a nightmare?

Mr. Charlton: I am glad you said that.

Mr. McConnell: I am not too sure I have closed the loop as to why you thought we would be happy.

Mr. Charlton: Only that I may be more cautious about what I ask today. As a matter of fact, I think I have a better perspective on what I was trying to get at yesterday. I stayed even later last night and had a chat with one of your staff who suggested a number of things I should pursue at Richview tomorrow morning. Then perhaps we can come back to what it really was I think we missed in terms of each other yesterday.

Mr. McConnell: Speaking more seriously, if there is anything specific we could do to help you in that area to better understand our situation, we would be most pleased to try to do so.

Mr. Charlton: Thank you. At any rate, on the presentation before us here today, I just have one question which relates to Hearn and to the comment on Hearn on gas. Are there currently any discussions, negotiations or other things ongoing with the city of Toronto or any other proponents in Toronto around the Hearn station?

Mr. McConnell: Yes, there are. Downtown Toronto, as you know, has a significant amount of central cooling and central heating. On the railway lands, the city of Toronto requested proposals for providing cooling and heating and there were a number of proposals that came in. The proposal the city of Toronto is favouring at the present time is a proposal made by a corporation called Trigen. That Trigen proposal resulted from discussions that company had with Ontario Hydro in which it asked us if we would co-operate with it in a cogeneration proposal.

We indicated we were quite prepared to work with them in considering such a proposal. The details of this are not worked out yet, but one possible phase is where we might, for a short period of time, deliver steam from Hearn to meet the energy requirements while they are building a more permanent facility, which would be a new installation that would be on a small piece of land on the western part of the R. L. Hearn property that basically would burn gas, would generate

steam, and in turn, would provide the chilling that is required, and simultaneously would develop electricity. We agreed we would buy it at a fair price, corresponding to the kinds of things we talked about yesterday for independent generation.

That business transaction is primarily between Trigen and the city of Toronto. We simply indicated that we were prepared to co-operate with any agent that wanted to put in a proposal.

Mr. Charlton: Although there are some details to be worked out, the proposal is likely to proceed in some fashion and we will end up with Hearn back on the system on gas.

Mr. McConnell: No. This would be very temporary. There may or may not be a temporary period at the front end when we would provide a bit of steam to them in order to get the thing under way, but the ultimate arrangement would be a package owned and operated by Trigen that would be burning gas and then we would be buying electricity.

Mr. Charlton: In a totally separate plant. Hearn would not be operating after that plant was built.

Mr. McConnell: Hearn would not be operating after that except, as Mr. Snelson has indicated, and of course this morning Mr. Marriage indicated, that we are using the R. L. Hearn as part of our flexibility; that is to say, we are keeping it in a mothballed state so that if we found ourselves, say in another two or three years, with power demands continuing to grow like they have in the last two or three years, we could bring it back on stream and make sure we at least meet the power requirements.

It is expensive to run, though. It is very expensive to run for two reasons: first, anything that burns gas is expensive, and second, Hearn is particularly expensive because it is very inefficient and very old. The efficiency of our more recent fossil-fired plant is 50 per cent higher than it is at Hearn.

1110

Mr. Marriage: To add to that, we are also interested in the site in terms of any other possible future clean-coal developments, because as you indicated earlier, it is right in the downtown Toronto area. The transmission is already there. It provides this balance, again, in terms of getting some of the generation close to the load. It is a very effective site.

Mr. Charlton: I think you have answered my question very well. What I was trying to find out was whether you were telling us that basically at

this stage Hearn is in a flexibility stage, but if this proposal proceeded, Hearn would end up back on the system. What you are saying is no, except perhaps for a very short period.

Mrs. Sullivan: One of the things that has really struck me about the discussion this morning is that the evaluation of bringing plant back into service is really part of the whole system evaluation. I am wondering, in terms of the strategy, in determining the prioritization of bringing plants into service, how much emphasis would be placed on the kinds of new technology that could be introduced when a mothballed plant is brought on in terms of efficiency or in terms of, for example, cogeneration, which Mr. Charlton has just raised, the technological advances that could occur at the same time to increase efficiency.

Mr. Penn: I could make an opening comment, Mrs. Sullivan. When I present, maybe this afternoon now, the presentation on clean-coal technology, I will be mentioning that we have evaluated as a study the use of fluidized-bed combustors for the Hearn plant. That is an example where we would be looking at new technology that is promising to rehabilitate or to use the conventional side of an existing plant.

Mrs. Sullivan: That might occur at the same time as bringing a mothballed plant out of mothballs into service again. The introduction of that technology could occur at the same time?

Mr. Penn: It may. It depends upon the status of this emerging technology and whether we are certain it is reliable and is cost-effective. Fluidized-bed combustors are not quite in that category yet.

Mr. Snelson: There is a system aspect to this; that is, that the advantage of mothballed plant from a flexibility point of view to the system is that it can be brought back on the system quickly. Obviously, the quickest way of bringing it back is to restart the plant that is there with the minimum of fixing up to make sure it will work. Whether there is time to do this before it is brought back into service will depend on what is the lead time in which the need is foreseen. It may be that a plant has to be brought back using existing facilities initially and then the modifications would be made at a later date if the need for that plant was seen to be continuing for a long period into the future.

Mrs. Sullivan: I do not know if this next question is hypothetical, but I was thinking about the Hearn station in terms of its gas fuel. If it were the decision of Hydro, for example, to take it out

of mothballs—given some of the other things you said today, that may not be a priority—would Hydro already have negotiated a longer term fuel contract to ensure supply?

Mr. McConnell: Generally, the answer to that is no. We would consider our taking it out of mothballs as an opportunity to buy time; that is to say, we would have no desire to take it out of mothballs and then run it for 10 to 15 years. We would be saying: "Somehow or other we got ourselves into a pickle here. We're short of power. We'd better get on with something else that's more economical, but because we are caught short, what we'll do is run it until we have something else to replace it."

Mrs. Sullivan: Very interim period.

Mr. McConnell: Going back to your earlier question, I think people here are familiar with the three Rs: reading, writing and 'rithmetic. At Ontario Hydro, not to be outdone, we have our three Rs, and they are germane to the question you are asking: rehabilitate, redevelop and replace.

There is a wide spectrum there where we can do modest modifications in the form of rehabilitation. We can make very drastic changes in the form of redevelopment, such as Mr. Penn has just talked about: take the whole boiler out, gut it, put a new one in and maybe use the existing turbine generators and so on. The third option we have is to level it and build a brand new plant. Those are our three Rs.

Mr. Snelson: Your question related to the gas supply. I can perhaps put that into some perspective. The gas that would be required for a plant like Hearn operating at a high-capacity factor—we may only have to use it for peaking purposes—but the high-capacity factor could be a very significant part of Ontario's gas requirements and so could impact on gas pipelines and have quite substantial implications. For instance, operating at an 80 per cent capacity factor, Hearn would use about 16 per cent of Ontario's utility gas sales. We are not just talking about a small incremental supply of gas. We are talking about a substantial amount.

We have had discussions with gas companies that would like to build combined-cycle plant on the Hearn site. Their proposals actually had oil as a back-up fuel to their facilities for a few days in the winter, because they did not foresee there being room in the gas pipeline over the winter peak period for the gas for their proposals.

Mrs. Sullivan: My last question is, how easy is it to shift from one fuel source to another? Is that a fairly simple process?

Mr. Marriage: It depends whether you have the facilities in place. In the case of Hearn, we have the gas facilities there. We also have some facilities on some of the units to run on coal. Most of our other plants, of course, have only one fuel source. I think you are looking at several years to change fuels.

Mrs. Sullivan: I wondered, because you did mention that as an option.

Mr. Marriage: A longer-term option.

Mrs. Sullivan: A long-term option.

Mr. McConnell: We could take and retrofit a coal-fired station to burn gas in a matter of a couple of years or so. Is that fair enough, Mr. Penn?

Mr. Penn: Yes.

Mr. McConnell: On the other hand, if we had a gas-fired station, to retrofit it with coal, I would not say is impossible but it is an extremely challenging thing to consider. It is not something you would normally entertain.

Mr. Penn: I could quickly add a point. If you took the Lennox generating station which, of course, is an oil-fired station, and wished to convert it to a coal-based fuel cycle, and there are many of them, it would take us at least three years of study. I would expect, because we were changing the fuel, that it would be subject to the Environmental Assessment Act and public hearings. Then it would take three or four years to do the conversion, so there is a case of its being a long process.

Mrs. Sullivan: You mentioned it as an option, but in fact it is really not a viable option in terms of plant.

Mr. McConnell: It depends on what conversion you are talking about. Some conversions you can make fairly straightforwardly; others are difficult.

Mr. Marriage: It could be a viable long-term option because we are also looking at other things with long lead times as well, but not in the short term.

Mr. Brown: I am just going to follow up on the cogeneration part. We have looked at cogeneration as going out to businesses and finding out where they may put proposals before Hydro that would increase energy supply. Has there ever been any consideration given to using Hydro facilities the opposite way around? It might be advantageous to business to be on the same location as the Hydro plant. We look at it that independent business can produce hydro. Why cannot Hydro, on the same site, help

business? Has there ever been any kind of look at that? Essentially, you end up with the same thing, I would think. You could perhaps utilize your steam or whatever in a business process.

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Mr. McConnell: Yes, Ontario Hydro does in fact sell byproducts. One of the byproducts we sell is steam and we are prepared to sell steam at our generating stations which produce steam. An example of that is the Bruce complex. The Bruce generating station, which is owned by Ontario Hydro, is the largest cogeneration plant in the world. We developed it as a cogenerating station to manufacture heavy water. We produce an awful lot of steam and make a lot of heavy water there, but we also are selling steam for the production of quality tomatoes. Tomatoes are being produced now and sold in Ontario stores as a premium product, because it is a very advanced production that is very carefully, automatically controlled. If you have not tried them, you should.

Mr. Brown: I am pleased to hear that. The second question relates to reserve margin. It appears to me that the reserve margin has increased here to 25 per cent. Is that correct? That maybe follows from the questions I asked the other day about the network around this—the kind of reserve supply; the large band of demand. We are not sure exactly where you are going to have to be in it. Is that a fair assumption on my part?

Mr. McConnell: I am not sure whether you were here when I made the presentation, but in my presentation I indicated the criterion we work to for planning has to do with customer reliability. That was 25 system minutes. I indicated that we compute each year for each year what reserves we require. That varies from year to year, but it typically is in the region of 20 to 25 per cent.

Mr. Marriage: I guess to further answer your question, the reserve calculation also takes into account the frequency and duration of the outages. As I indicated, if we get into situations where the frequency and duration increase, that will increase the reserve requirement as to the calculations.

Mr. Brown: I think we had a conversation here the other day about what other utilities are doing around us and what reserve power may be available for us to purchase from them at a given time.

Mr. McConnell: That is right.

Mr. Brown: What opportunities we might have to sell also.

Mr. McConnell: That is correct, yes.

Mr. Brown: It would probably be fair to say at this point we are looking at the 25 per cent as being more likely than the 20 per cent situation we are at now.

Mr. McConnell: I think it still would probably tend to be mostly 22 to 24 per cent? Mr. Snelson?

Mr. Snelson: We were showing 24 per cent for the 2008 period, but it does fluctuate according to the assumptions about the reliability of individual plants and according to the assumptions about the load shape. In actual fact, a flattening of the load shape due to load shifting tends to increase reserve requirements, because you are close to your peak load for a much larger proportion of the time and therefore the risk is higher.

Mr. South: Mr. McConnell, I am confused. I think you said using gas is very expensive.

Mr. McConnell: Gas is expensive, period, yes, for making electricity.

Mr. South: Why? It seems to be a relatively competitive fuel in the general energy picture.

Mr. McConnell: Yes, gas is a very competitive fuel where you are burning it directly in a factory or in your home—very competitive—but when you go to make electricity with it, gas is very expensive compared with hydraulic or uranium or coal, much more expensive.

Mr. South: It seems to me we are finding more and more gas in western Canada and the Arctic, and I think we may be into a problem of pipeline capacity getting it here, but I am thinking in terms then of gas as a possibility for a large generating station. When you look at that total picture, is it still for some reason very expensive?

Mr. McConnell: Gas in a large generating station is attractive to us for short-term needs and opportunities. As we just described, if we got ourselves into a pickle and we were going to be short of power and we wanted to bring Hearn back on and burn gas, we would do so, but it would be more expensive power because we would be burning more expensive fuel. At the moment it is not attractive for us to build a large station that would be running on gas with an intent to run it for 40 years.

Not only would it be more expensive than coal and uranium right now, but there is also an extremely high probability that during the period 15 years from now to 40 years from now, the price of gas will shift up relative to the price of electricity as well. The price of gas in the North

American market is going to be a market-driven thing where the producers are trying to maximize their profit, and although we are fairly well endowed in Canada, the Americans are not that well endowed. I think they have already passed their peak, and certainly by the turn of the century there will be a real price squeeze on in terms of gas.

The bottom line is that for producing electricity in the long term it is not attractive. That is one of the reasons, incidentally, why in Canada, and in particular Ontario, our rates are so much lower than in America. They took a road between 1950 and 1970 where they went for an awful lot of electricity generation burning oil and gas. Now, of course, they are stuck with it and their electricity rates are very high as a result.

Mr. Snelson: I can perhaps help explain why gas is not cost-competitive as a source of fuel for producing electricity but it is cost-competitive as a source of heat for direct use in houses.

It really boils down to a question of the efficiency with which gas can be converted into a useful energy form. Gas is a very high-quality fuel. When you burn it in your own furnace at home, if you have a regular furnace, you may get an efficiency in the order of 70 to 80 per cent. If you have one of the newer furnaces like the one I talked about the other day, you can have efficiencies of over 90 per cent. When you are burning it in your own house, you can get most of the heat into the house to perform its useful function.

In an electrical generating plant, there are certain laws of physics that say you cannot convert all of a heat source into electricity. With a plant like Hearn, about 30 per cent of the heat in the gas is converted into electricity. With some of the newer technologies, you might be able to get 45 per cent or so of the heat from the gas into electricity, and so we are not really making the best use of the gas if we burn it in an electrical generating plant, we are getting only a part of the heat into electricity.

In a cogenerating plant, even a larger proportion can be produced into useful energy, and that is a more efficient use of gas.

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Mr. South: What about the possibility then of converting those 400,000 homes we have on electric heat now into gas heat, releasing that electricity back into the system? How appealing would that be? Maybe not to Ontario Hydro.

Mrs. Grier: Very good idea.

Mr. South: What would that free up, those 400,000 homes that use electrical heat? Are you

talking year-round, or are you just talking winter?

Mr. McConnell: Do you understand the question?

Mr. Snelson: Conversion of electric heating in homes to gas.

Mr. McConnell: Conversion of electric heating in homes; you are referring to converting it into hydrogen gas?

Mr. South: No. Put it back into these high-efficiency gas furnaces. Put high-efficiency gas furnaces in these homes and remove the electrical heat.

Mrs. Grier: Hydro could pay for the furnaces.

Mr. McConnell: I do not really understand the question.

Mr. South: You said there is something like 400,000 homes in Ontario that are electrically heated.

Mr. McConnell: Yes.

Mr. South: Why not think in terms of putting these high-efficiency gas furnaces in a good many of them? I know you could not put them in all of them, but this would be a form of—

Mr. McConnell: To reduce the electrical load?

Mr. South: Yes.

Mr. McConnell: There is nothing wrong with that notion. Prior to the oil embargo, if you go back to the 1960s, oil was the cheapest way of heating your home, the second cheapest was gas, and the most expensive was electric. After the oil embargo came along, the most expensive way to heat your home was with oil, and the second was electric and gas was the cheapest. There is a good part of the province that does not have gas, and that is where the electric tends to be used.

Mr. South: There must be a lot of those homes though that are in Toronto.

Mr. McConnell: Yes. Some people will not allow gas in their homes regardless of what the price is.

Mr. South: I appreciate that. "Go modern, go gas, go boom." That is what they were saying in Brockville when they brought in gas.

Mrs. Grier: "Go modern, go electric, go zizz."

Mr. South: Very good.

Mr. Snelson: I think there is an answer to this question which is perhaps helpful, and that is, if the alternative were to burn gas in a central generating plant or to burn gas to heat your home, clearly burning gas directly in the home is a better

alternative; but if the alternative is to burn cheap coal, perhaps at lower efficiency in a central electrical generating plant, or to burn uranium, which is another plentiful fuel, in a central electrical generating plant, or to burn an expensive scarce fuel, albeit at higher efficiency, then there is a pretty good tradeoff there.

With the electrical system, you are using the plentiful, abundant, renewable fuels such as hydro, and the thermal efficiency may not be high, but the economic efficiency may be very high. There is a tradeoff there, and basically at the moment that is left to customer choice, but you have to consider those sorts of resource implications of the actions.

Mr. McConnell: I do not want to protract this discussion because it does not really have to do with the subject that we have, but in the longer haul, on the subject you have raised, Mr. South, Ontario Hydro and Sweden are leading the parade in the world, and there is little question in my mind that a lot of homes in Ontario within the next 20 to 40 years will be heated by very highly efficient ground-source heat pumps in which we run at 300 per cent to 500 per cent efficiency relative to the price of electricity. That will happen. I think you will see that this will be a major move in this province, as the infrastructure develops that can manufacture, install, maintain and make that a very practical thing. Certainly, it is being pushed in Sweden now.

Mr. Chairman: Mr. Matrundola, you indicated you had a question relating to transcript undertaking 1. I wonder if this might be a point we could very briefly deal with it, as we are sort of falling behind our schedule again.

Mr. Matrundola: I will try to be very brief. Perhaps Mr. McConnell could answer that. This is referring to the question of August 3 about the standard height for 15,000 to 20,000 volts or thereabouts. The response is: "Ontario Hydro's overhead wires are installed to meet minimum requirements. The minimum vertical clearances of overhead exposed wires above ground are dependent on voltage level and location, as follows."

I do not quite understand the table. If I may show it to you. It says here it would be 2,400 volts and 4,160 volts up to 16,000 to 20,000?

Mr. McConnell: Yes, there is a hyphen in between. That is a voltage band.

Mr. Matrundola: Does that mean that from 2,400 volts-4,160 volts to 16,000-27,600 volts the height is 5.05 metres?

Mr. McConnell: Yes, that would apply to both.

Mr. Matrundola: And when you go beyond 27.6 kilovolts, up to 44 kilovolts will be 5.5 metres in height?

Mr. McConnell: That is correct.

Mr. Matrundola: It says "across or alongside all roads, private lands; etc. accessible to vehicles." Then the height is less across ground accessible only to pedestrians.

Mr. McConnell: Yes, if there are no cars, trucks, vehicles or anything—

Mr. Matrundola: What if it is a park or, for example, the Hydro line north of Finch where vehicles could go?

Mr. McConnell: If it were in a park in which no vehicles and what have you were accessible, I would think the limit would be the four metres, but I would have to check that. I am not personally an expert in that area.

Mr. Matrundola: I find that extremely low, whether it is the four metres or 5.5 metres or any of them, quite frankly, for this type of voltage. I would strongly recommend that Hydro should have a second look at these lines, especially when these lines are placed in an area where there is a park or whatever, where children play and what not; it poses an extreme danger. You might recall the case a few years ago—

Mr. McConnell: Certainly, as far as children are concerned, that always worries us with regard to transmission and distribution. But the line clearance is not the thing that represents our major concern. It is there when the children choose to start climbing up.

Mr. Matrundola: When they start climbing up it is different?

Mr. McConnell: That has nothing to do with the clearance.

Mr. Matrundola: I know that starting to climb up the pole is a different story, but the height of 12 feet to 16 feet or 18 feet—I see that as extremely low for 16,000, 18,000, 20,000 volts.

Mr. McConnell: For that voltage, you can in fact get quite a lot closer without major risk. That is relatively low voltage, 44 kilovolts.

Mr. Matrundola: What about 16 or 18 kilovolts?

Mr. McConnell: That is even lower, so that 3.7 metres is quite conservative. These are not Ontario Hydro's standards; these are pretty standard requirements all over North America.

Mr. Matrundola: I find them to be low. I believe power lines of that kind of voltage, like

16,000, 18,000, 12,000 volts, should be much higher from the ground than the standards are now. That is my recommendation.

Mr. McConnell: There is no one on this panel who pretends to be expert in this particular area. We can certainly pass along your recommendation to those who are involved in the distribution system.

Mr. Chairman: Could we then move on into the next subject, which is alternative generation? Mr. Penn, would you come forward, please?

Are these slides visible enough, or should all of the lights be dimmed? Seeing no complaints, I guess we will leave things as they are.

Mr. Penn: I consider it a privilege to be asked to talk about future supply options and, in particular, to discuss with you the nature of the strategy elements and the reasons we are proposing them to you. I came before you a week ago and gave a 20-minute presentation on all supply options that were available to Ontario in the future. They are diverse, and compared with other jurisdictions, therefore, we are most fortunate.

I described their characteristics and I discussed their roles. Their characteristics were such that in some cases the resources were renewable, in other cases nonrenewable, sometimes expensive, sometimes cheap, sometimes scarce, sometimes abundant, and through this process we emerged, after that 20-minute presentation, with four groups of supply choices to consider for the future.

I shall be presenting the next four presentations, which means I will be talking to you for somewhat over an hour. By the way, I have been threatened with extermination if I get carried away and exceed that time. What I propose to do in my first presentation is cover the first two strategy elements, which refer to alternative generation.

We have listed those two strategy elements, 5.6.1 and 5.6.2, separately for brevity and no other reason. I will consider them together. Then I will move during the afternoon, I would imagine, to talk about the reason why we are suggesting to you that there should be an orderly development of our remaining economic hydraulic resources in the province, why we feel it is appropriate to maintain the Candu option for consideration in the future and, last, why we believe it is necessary to pursue clean-coal technology.

In a nutshell, the strategy elements I will be talking about are covered by those short words, but in each of my presentations, I will start with

the precise wording of the strategy element, because I believe it is important that we see all the words. Then I will be discussing the nature of these options: What is our experience with them? What has been their performance to date? What are the concerns with them and their advantages? What have been the benefits that have accrued to Ontario?

Having said that, I would like to move to the first presentation, which is covered in your notes under 11.5-F. We will start with the two strategy elements.

The first element has to do with the advice that Ontario Hydro has that we continue our investigations into alternative generation. Ontario Hydro will continue to investigate the technical and economic feasibility of alternative generation sources, particularly those that use renewable and Ontario resources.

The second element has to do with the implementation of alternative generation in the future. Hydro will implement alternative generation sources in specific situations, for example, in isolated systems, where they are the most beneficial alternative of those available to us.

I would like to move now to which alternative generation systems have been investigated and why we plan to continue investigating them. First, perhaps we should start with a definition of what Hydro means by alternative generating systems, because that means different things to different people. What we mean is those systems which supply electricity, either directly or indirectly, but are not traditionally recognized as sources of base load supply of electricity or peaking supply. Of course, the traditional ones are hydroelectric power, nuclear power and fossil generation.

We have had programs in solar photovoltaics and wind power for some considerable number of years. Because they have been placed in a demonstration phase and have an opportunity for implementation within our province in the future, I plan to discuss those two particular systems at greater length.

Some of the other systems I mentioned last Thursday have application in the future. They are not economic in the next 20 years but they have very high promise in the longer term, such as fusion and pumped-energy storage. If we were not in a position to propose and perhaps use time-of-use rates, pumped-energy storage would be one way of levelling load swings. But it is not economic in comparison with alternative methods of levelling our load through the 24 hours of a day.

Fuel cells have particular application but they are very small. They are definitely for the future. We spoke about municipal solid waste in regard to cogeneration. Mr. Palmer has dealt with that at some length with you. We have a cogeneration plant using wood chips in operation, but generally the use of wood, biomass and peat are not economic today for generating bulk electricity.

We have in the past undertaken extensive studies on the use of Ontario's remaining lignite, referred to as the Onakawana project near James Bay. It too is not economic in the time frame we are discussing.

However, our strategy 5.6.1 indicates that we believe it is important to continue our investigations into these renewable, largely indigenous to Ontario, alternative generating systems for specific application.

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I would like now to move to the implementation and demonstration of solar photovoltaics and wind power.

Solar photovoltaic is a means of directly converting sunlight to electricity. However, our studies, which have been extensive, show that in our province it is impractical technology for application on the bulk electric system. There are many reasons, which are given in the notes that you have. One of the few more important reasons is that the power is not dispatchable. That means power is very variable from this source and needs a backup facility. In the case of a bulk electric supply system, this backup facility would be large. It needs a storage facility.

Capital cost of the system is presently high, \$8,000 per kilowatt installed. The cost of operating is also high, somewhat greater than twice coal-fired generation. Just as a purely fictitious example, if one were to use solar photovoltaics to generate the power of one Pickering nuclear generating unit, one would have a raise over an area the size of 80 per cent of Metropolitan Toronto.

Clearly, there are good reasons why it is only suitable for localized circumstances and, indeed, it is useful and has a very considerable interest for the future in small, remote communities.

Hydro has co-funded and built with others three facilities which I would now like to briefly review.

The first facility is a 2.4-kilowatt stand-alone plant at Atikokan in northern Ontario. The second is a 4-kilowatt plant which is grid-connected at Kortright, northwest of Metropolitan Toronto. The largest, which is currently in the operating phase and has been operating for

the last year or so, is a 10-kilowatt system connected to a hybrid diesel supply at Big Trout Lake. Big Trout Lake is about 500 kilometres north of Thunder Bay.

Mrs. Marland: Where the polychlorinated biphenyls are, in Big Trout Lake, but that is an aside. I am sorry.

Mr. Penn: In recent years, since the early 1980s, Ontario Hydro has spent approximately \$700,000 in developing these systems. We have had performance from these three plants that is quite encouraging. The systems have been shown to be reliable. We have, though, had initial problems with auxiliary systems.

Our experience to date shows that the fuel savings do not suggest, even for remote communities, that they save in costs. On the other hand, there is distinct evidence that the cost of the modules is significantly reducing with time and, therefore, there is high promise.

My last comments on solar photovoltaics is a picture. On a 35-millimetre slide this looks very clear but, unfortunately, when you try to put it on an overhead it is very difficult. Perhaps you would like to just look at the picture in your book. This is the solar photovoltaic assembly at Big Trout Lake. It involves 300 modules. It is about 13 feet high and 160 feet long. You can see in the background of that picture the diesel generating facility and the local connection to the local distribution electricity system.

I will move to wind power and talk a little bit about our wind power investigations and then follow it through with what Hydro's program is in wind power and give you some examples of that too.

Of course, wind power has been used as an energy source for centuries, particularly in Europe, and enjoyed agricultural use in our province, certainly in the 1920s and early 1930s. Again, our studies show that wind power in large quantity is not practical for our bulk electric system. The simple reason is that Ontario is one of the least windy places in the world. There are some exceptions, such as Pelee Island and far northern Ontario. Therefore, the system definitely has solar photovoltaic use in parts of our province in the future, particularly in those communities which are not fortunate to be connected to our grid as they are so remote.

We have continuing investigations. As an aside, costs are similar to solar photovoltaic with regard to bulk electric system. The land area required, again, for the equivalent of a single unit at Pickering station is six times the size of

Metropolitan Toronto, so it is clearly not as intensive an energy source as solar can be.

We have co-funded—because of its promise for remote communities—two ventures with the provincial government. These two ventures are a 50-kilowatt plant at Sudbury, which is a hybrid wind-diesel testing facility, and a 65-kilowatt facility at Fort Severn, which is getting close to the shores of Hudson Bay. We have spent approximately \$750,000 in recent years on our studies and these systems. The Sudbury wind-turbine test was used in a development sense in order to give us experience to select a design for the Fort Severn remote-community demonstration, which indeed is operating today and has been since 1987.

Again, looking at the pictures of these facilities in your books, the first one, which is the more traditional form of windmill, is the one at Fort Severn. It has the horizontal axis for rotation. The original test at the Atlantic Wind Test Facility in the Maritimes, in the next picture, is one which has the vertical rotational axis. This one did give problems, and the nature of the Fort Severn design, which is more similar to that used in California, is of the horizontal axis.

It is of interest to note that the major wind power in the world is situated in California. There are three good reasons for that. There are three long valleys, which funnel continuous, fairly high velocity winds. The cost of the electricity by alternative generation in that state is high and in previous years the state government and the US federal government have provided significant tax incentives for development.

I would be pleased to take any questions.

Mrs. Marland: This particular area has always interested me. In fact, I think the vertical rotational axis was originally being researched by a firm in Mississauga; I am talking about 14 years ago.

Mr. Penn: You are quite right.

Mrs. Marland: It is the same design.

Mr. Penn: It is that type of design. I think Mr. Argue can probably offer us some detail on that.

Mr. Argue: It is our firm that actually built that turbine.

Mrs. Marland: What was the name?

Mr. Argue: DAF INDAL; now INDAL Technologies.

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Mrs. Marland: Right, I remember. In 1974, the school board was going to put a wind

generator at its field centre north of Orangeville. The site they had selected and made the decision to install that wind generator on was in a bowl. I knew from the aviation report that they did not have any wind inside that bowl. It was an interesting subject at the time.

Mr. Penn: There is another facility, a solar residential facility in Mississauga, that is currently under test as well. Mississauga has certainly started some ventures.

Mrs. Marland: The facility you just described, is that the one on the Lakeshore, in this gentleman's backyard? You are talking about the solar one?

Mr. Penn: I do not have personal knowledge of this.

Mrs. Marland: He has about two banks in his backyard.

Mr. Penn: I think it is much bigger than that. This is a Department of Energy, Mines and Resources system, a federal government sponsored system. I think it is considerably bigger than that type.

Mrs. Marland: Than would be in someone's backyard.

Mr. Penn: Yes.

Mrs. Marland: My question about wind power is, is it true that Hydro-Québec does have wind-power generation extensively over the northern half of the province?

Mr. Penn: No, they certainly have demonstration facilities; actually bigger facilities than we have in Ontario. They have had extensive, mechanically related problems in the past with their systems. I am afraid I do not have the detailed knowledge, although my staff could give it to you.

Mrs. Marland: But it is obviously the difference of the climatic conditions, and that is what you are really strapped to with wind generation.

Mr. Penn: Yes. I did mention in the notes, of course, that we are measuring the wind velocity in all locales of the province to be certain of what the possible future applications are.

Mrs. Marland: It is easy to understand why it is not truly a viable alternative, unfortunately.

Mr. Penn: It is unfortunate.

Mr. McConnell: We are still talking of using it for niches in the problems, where there is no access to our main grid.

Mr. Snelson: I believe Hydro-Québec's tests are on the Magdalen Islands in the St. Lawrence River, so that is a separate part.

Mrs. Sullivan: When I was sitting as a director of CN Tower, we participated in an experiment there with photovoltaic power. It did not work awfully well. Was Hydro a participant in that or was it the federal Department of Energy, Mines and Resources that would have been in that pilot project?

Mr. McConnell: I am not aware; I do not think we participated in the photovoltaic project on the CN Tower.

Mr. Penn: No, we did not.

Mrs. Sullivan: It would have been federal. OK.

The only other thing I want to ask is, are we later going to have a short discussion on the possibilities of fusion?

Mr. McConnell: We have no presentation. If you wish to discuss that, we could discuss that now.

Mrs. Sullivan: From what I understand, it is really a longer-term opportunity, and I wonder if Hydro was following the experimentation that is being done at Princeton University.

Mr. Penn: Yes, we have a fusion group in the design and development division at Ontario Hydro, project managers on behalf of both the federal and the Ontario governments, Canada's fusion program. Of course, there is also fusion work going on at Hydro-Québec. We have staff participating in the work at Culham in England, the European joint venture, and at Princeton, and have had staff there for at least four years.

Mrs. Sullivan: Am I correct that you would be looking at fusion as a possibility, assuming that the cost can be economic and the technology proven well beyond 2000?

Mr. Penn: We have done extensive assessments of fusion. It really is a limitless power supply because it uses hydrogen which is in our total world, both oceans and air. We feel that from this work it will not be needed because it will not be economically competitive with other sources of generating electricity in Ontario until about the year 2040.

The technology remains to be demonstrated to have scientific feasibility anywhere in the world. Princeton and Europe expect to do that in 1990. From there on would be the need to design a commercial plant. If one emerges I expect it to be in the United States, the USSR or in Europe first.

I do not know if our participation in Canada, which is respected worldwide, is in the fuel side of fusion and, particularly, our very considerable knowledge of tritium and hydrogen.

Mr. McConnell: One of the enthusiastic participants in our fusion program is a woman by the name of Carol Burnham. I announced this week that Carol Burnham is our new director of environment.

Mrs. Sullivan: That is nice to hear.

Mr. Argue: I have a short question. Mr. Penn, first of all, I think it is a very favourable step that Ontario Hydro has joined the associations involved in alternative energy such as the Solar Energy Society of Canada and the Canadian Wind Energy Association.

I had a question about your discussion on wind-power investigation. I appreciate that this is not your area of expertise within the organization and it might be an undertaking. I am looking at your references to the capital cost of wind turbines as being \$7,500 per kilowatt and the maintenance and operating costs. I wonder if you could provide us with some background to those estimates.

Mr. Penn: We certainly could. I do not know whether you are aware that the expertise in Ontario Hydro in these systems lies within the power equipment department. Blair Seckington provided me with this information recently. I understand it is current.

Mr. Argue: I would like to just have the background on that information, if possible.

Mr. McConnell: OK. We will undertake to provide that to you.

Mr. Chairman: Further questions? Seeing none, I will adjourn the committee until 1:30 this afternoon.

The committee recessed at 12:10 p.m.

AFTERNOON SITTING

The committee resumed at 1:37 p.m. in room 151.

Mr. Chairman: We are going to pick up with the presentation on an orderly hydraulic program. Is that right, Mr. McConnell?

Mr. McConnell: Yes.

Mr. Chairman: If Mr. Penn could come forward, we will proceed. Could you dim the lights, please? I think that would help with the overhead projections. Thank you. Mr. Penn.

ONTARIO HYDRO

Mr. Penn: Last Thursday, when I spoke in broad terms about the supply options, I mentioned the question of role and I pointed out that there are different roles to be filled. The roles I was talking about filling were the roles of base load supply, peaking needs—an intermediate position between those two—energy storage and serving remote communities.

We dealt this morning with one supply option that would meet remote community needs. This afternoon we are going to start with hydraulic generation development in the province in the future. Its role is more in meeting peaking, with some energy storage aspects to it. This is the sort of thinking—and as we go on this afternoon we will see that different roles are being met by different systems—that led me to make the statement that there is no single best supply option that can meet all roles.

I would like to start with strategy element 5.7 with regard to Hydro's intention to develop the remaining economic hydraulic resources in the province in the next 20 years. The strategy element reads, "The economic hydraulic developments should be undertaken in an orderly program."

My purpose this afternoon will be to tell you what is the extent of the hydraulic developments, being generally above 20 megawatts in capacity, because, as we heard from Mr. Palmer the other day, the private sector is being encouraged to develop resources below 20 megawatts. Whatever the energy content is, where are these hydraulic resources to be developed? What is our estimation of the cost? Finally, why is there a need to develop them, as our strategy is suggesting, in an orderly fashion?

We have 68 hydraulic stations operating, as you know. They were built from 1905 up until the early 1950s. Last year they generated 28 per

cent of our electricity. As you heard earlier, they did it at a cost of about one cent per kilowatt-hour. We have determined, in the range of 20 megawatts and above, that the potential undeveloped capacity, which is mainly in the northern part of Ontario, is 9,300 megawatts.

However, there are certain factors that militate against developing all that potential in the next 20 years. One of them is that 1,085 megawatts of potential is in our designated parks system; they are waterway parks. There are another 3,330 megawatts—and I will point out where these sensitive northern rivers are—that, if they are developed, will be subject to fairly serious environmental impact.

Then there are still others that are considerably remote or where the flow of water is such, and the head that we can develop is such, as to be uneconomic in the next 20 years. If you take that as being said, there are 17 economic sites amounting to 2,750 megawatts of capacity that should and can be developed in an orderly fashion.

As I mentioned, they are all in northern Ontario with the exception of the Niagara River development, which I will comment on a little later. We are preparing and have prepared an environmental assessment for the development of the Little Jackfish River, about 120 megawatts of this 2,750. We are about to submit that to the Ministry of the Environment to be subject to the Environmental Assessment Act and, we hope, to gain approval to proceed.

We are also preparing environmental assessments on the Mattagami extension complex, which currently is subject to negotiations with Spruce Falls Power and Paper Co., which owns a key station that is part of this complex. We have also started preliminary work and have an understanding of the cost and the nature of the environmental impact for Niagara Falls of the so-called Sir Adam Beck 3 plant.

Moving along, this chart summarizes in a simple, easy way to understand the theoretical potential in terms of capacity—as I mentioned, 9,300 megawatts—and the energy content of that capacity. Then, having looked in a theoretical way and measuring in thousands of megawatts capacity, what we advise is currently economic in the next 20 years and is environmentally practical to develop.

The key thing to note is that we are talking about peaking energy. The energy content

theoretical is slightly less than one third of the total capacity. Looking here, out of 2,750 megawatts capacity, we have approximately 700 megawatts of energy. Really, when we are thinking about that, what it means is that if you take 24 hours of the day, you cannot expect these plants, because they are not flow-of-river plants, to continuously generate. The head pond will fill and then, when it is full to a certain extent, we will generate electricity by allowing the water to pass that is the energy we will get on that capacity; although, of course, the plant would be capable of generating at peak periods at that full capacity.

Where are these undeveloped resources that we propose to develop in an orderly fashion? Again, you might find it easier to refer to your books and see the photograph, but I wanted to point out that we are talking here about extensions to existing plant, about new plant and, in some cases, about redevelopment of plant to get more energy out of existing plant.

The bulk of the undeveloped resources we have are here. This area is known as the Moose River basin, and within the Moose River basin there are really three rivers of interest. One is the Moose, one is the Mattagami, and the third is the Abitibi. I will come back to the potential of these various sites in a moment.

If we go to the far northwest of the province, there is opportunity to perform some redevelopment at Ear Falls, an existing plant. There is also a possibility to put in a new plant at Maynard Falls. I referred to Little Jackfish, which is a river that flows into Lake Nipigon, and that is the site the environmental assessment has now been completed on. Preliminary engineering has also been performed.

We then have in the central part of the province a small new opportunity at Patten Post and we have an opportunity to redevelop to get more output at Ragged Chute. Of course, the plant at Niagara Falls amounts to about 550 megawatts of new energy but in fact, as you heard this morning, will use water currently used by the Ontario Power station, which is an old hydro station; that would bring the new complex, if it is approved, to about 700 megawatts.

Before I leave, I mentioned uneconomic waters and I mentioned environmentally sensitive waters. What we are talking about is this lowland area where the Severn River and the Winisk River flow into Hudson Bay and where the Attawapiskat River and the Albany River, which is particularly low-lying and sensitive environmentally and passes through native treaty

rights territory, flows into James Bay. The potential that we are saying cannot really economically or environmentally be responsibly developed at this stage is in that area.

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Just to familiarize you with a few names of the plants that we are proposing to develop in an orderly fashion, they are listed here. As I mentioned, a lot of them are associated with the Moose River basin. I mentioned there were 17, but if you add it up here there are 14 listed, because the Mattagami complex includes four stations. But the Moose River involves the Mattagami, the Abitibi, the Moose and another one here on the Mattagami.

The thing to note, which is an important point, is that we list the capacity for economic development of 2,750 in total and then we list the energy that can be got out of each of these units. In some cases, you will see vast differences in energy. For example, Otter Rapids only has an energy of 4.9 but could have a maximum capacity of 174, as opposed to Niagara where you would expect much higher flows of water where the energy ratio to capacity is much higher.

I would like to move now to summarize the future hydraulic potential in our province in the next 20 years. The best sites have been utilized. That is one of the reasons our electricity prices and costs are low today in our province. They generate power an average at one cent a kilowatt-hour.

The remaining sites will have high capital costs. They are often in remote areas, without roads, without communities in many cases. Clearly, it is an opportunity in building plants up there to increase access to that part of our province and help it develop.

The sites are remote from our load centres. They are a long way away, so their integration through transmission into the main grid is a consideration in the total cost of incorporating these new facilities into our system. There is an exception with the Niagara development.

They may have significant environmental impacts in places. Clearly, the vegetation in certain areas is such that if you do not take mitigating action to remove a lot of it, then mercury can be leached from the soils or the rocks that would be beneath the head pond flooded area.

Of course, flooding in itself has an environmental impact. It causes the relocation of people in some cases, as well as tourist facilities and the like. There is also concern that the fish popula-

tion and the fauna and flora shall not be disturbed by these developments.

Why do we need an orderly development? My comments are particularly aimed at the northern rivers, the Moose River basin. We need to consider the river system as a whole because, from an environmental point of view, if you proceed to develop a particular station in isolation without concern for its impact downstream or in some tributary, you either cause more environmental problems in those places or you do not get the maximum energy from the system you are looking at that you would do if you considered them all together.

There is another reason for orderly development and that is to avoid a disruptive social impact, a bust-boom type of situation. Of course, it is appropriate for orderly development to use our engineering resources, our consulting companies in Ontario for a steady flow of work during the period.

Those are the reasons for our strategy element on this subject. To save time, although you may have an interest, I am not going to show these slides. I have attached as an appendix, detail on the characteristics, the cost and the environmental issues associated with Little Jackfish, Mattagami and the Niagara River development. We will be pleased to answer questions on them. I will be pleased to show the slides if you wish but in favour of time I thought that information best be tabled.

Mr. Charlton: I have just two brief questions; I hope they are brief, anyway. One of the sites on your list was Ragged Chute. Is this proposal for an actual hydro development that will be in addition to an independent development at Ragged Chute?

Mr. Penn: Hydro has had plans for the redevelopment of Ragged Chute for a considerable time. Indeed, what I presented you this afternoon on the whole hydraulic program has been continuously reviewed over the last 10 years; and even as recently as this July, we reassessed our potential.

I would like to ask Mr. McConnell to talk about the situation in which private enterprise has also shown an interest in that site, as I believe it has in others.

Mr. McConnell: We have registered Ragged Chute with the Ministry of Natural Resources as a plant that we are interested in. As indicated on the table, that is 104-megawatt capacity.

Mr. Snelson: I think the situation you may be referring to is that there is a private developer who has shown some specific interest in Ragged

Chute. I do not have the full details but my understanding is that he has been given, for a limited time period, an opportunity to use that site to demonstrate the use of hydraulic power in conjunction with combustion turbines to produce a slightly different sort of experimental installation.

I think that has been done in a way that would not preclude full development of the site, because he would not use the full potential of it. That is being done in a way that would not preclude full development at a later date.

Mr. Charlton: I think all of that is correct in terms of my understanding. Do you know whether that experimental project is actually going to be proceeding?

Mr. Snelson: I do not have the details with me. I am sorry.

Mr. Penn: I am sorry, I do not.

Mr. Charlton: It might be useful if, at some time before the end of the committee process, you could provide us with that information.

Mr. McConnell: We will undertake to provide you with a statement on the Ragged Chute development in the particular context of private enterprise.

Mr. Richmond: On a point of clarification, perhaps one of the Hydro officials could just clarify this: Of these 14 or 17 sites, however you count them, does Hydro in fact now have the water rights to all of those or are they up for grabs?

Mr. McConnell: The answer officially is no, but the real answer is yes and no. We have registered with the province all of these sites that we are keenly interested in.

Of course we have indicated that if we evaluate these sites and we conclude they are not economic, we would want them immediately released to anyone else who might want to consider developing them. But all of the sites that we are keenly interested in have been registered regularly with the Ministry of Natural Resources. They are fully aware of that. We have obligations to be doing site evaluations and that sort of thing to better define whether or not they are economic. Mr. Penn, in going over the presentation, has indicated that these add up to the 2,750 megawatts. We cannot be ironclad certain today that all 2,750 will turn out to be economic.

1400

I guess for us to be a just a little bit more precise—I was going to say “a little bit more honest”—for this capacity that we are talking about, we would have to say we have a bias

towards wanting to develop the remaining hydraulic plants, and that is in our strategy. I guess it would be fair to say that it is our intention to develop all hydraulic that is economic or near economic; and, strictly speaking, I think most of it is in the category of near economic.

Mr. Snelson: I would like to add a specific to that, and that is that there is at least one and there are probably two of those sites whose current status is that they have been, in fact, offered to private developers. Grand Rapids is in that category and, I believe, Long Sault Rapids is.

Mr. McConnell: Those two may or may not be available to us, is what Mr. Snelson is saying.

Mr. Charlton: I am going to ask you a question that I do not really know very much about but have read a bit about. I understand that in a number of places in the world there has been work done with hydraulic that is just installed right in a river as opposed to needing a head or a fall. Has Hydro done any research on that approach to the use of water and, if so, what has it found?

Mr. Penn: We have certainly looked at run-of-the-river-type facilities, with particular emphasis on what we call our mini-hydel projects, where we are talking about probably small streams and rivers for remote local use. When you look at the run of the river, in the instance of the northern Ontario rivers they would be, in my opinion, grossly uneconomic to develop that way.

Mr. McConnell: These are opportunities for development of, say, in the vicinity of zero- to five-megawatt units, small units; whereas in the development of, say, larger units—that is, higher than five megawatts—Ontario Hydro can manage this quite efficiently. Mind you, the majority of that work is done through private enterprise, but we can manage it on behalf of our customers.

We want to offer our customers, of course, the benefits that come from the development of this remaining hydraulic, but the fact of the matter is that our wage rates are not low for our operations and maintenance and, as in any public organization, no matter how streamlined we become in the future, there is always bound to be a certain amount of bureaucracy that is left, which adds to our administrative expenses for doing small things. Of course, this really means that private enterprise has an opportunity to be more efficient than us for those small sizes, particularly if you have somebody who has got some little old maintenance shop on his farm or backyard or somewhere, and he is going to give attention to

this on a part-time basis and is his own employer or has the work done by members of his family. We think there is a lot of merit there, particularly for the units that are under five megawatts.

Mr. Charlton: I was less interested in who might do those kinds of projects and more interested in whether you had done any major research and development on this kind of operation and whether you had looked at any of the technologies internationally to see what exists in the way of new things.

Mr. McConnell: We became extremely enthusiastic for a period of time, about 10 years ago in the 1970s, in terms of the promise of mini-hydel and that sort of thing, where with a minimum amount of engineering and a minimum amount of cost we could wheel in and take advantage through simple installation of, if you wish, packaged or standard little hydraulic plants. But the reality is that when the facts had set in and we got some experience, this does not now look nearly as attractive as it did when we started.

Mr. McGuigan: On the chart that shows the capacity and the average energy from hydraulic sites—you may have checked on this; it was in process when I came in—I am intrigued by the fact that Niagara has a capacity of 532 megawatts and an average energy of only 116. First of all, I need more explanation. The secondary question is, are you including in capacity the amount that goes over Niagara Falls for the tourist section; 50,000 cubic feet a second I think it is?

Mr. Penn: I am going to comment on that and invite Mr. McConnell to reply further. First, the 532 megawatts and the energy that you read out are the new additional capacity we would have at Niagara Falls. Over and above that, we would build a bigger plant to take advantage of water currently used by an older, more inefficient plant at Niagara Falls, which would bring it to 700 megawatts.

Obviously, the aesthetic appearance of Niagara Falls is most important. There is a treaty between the United States and Canada, which I believe is due for renegotiation in 1999, with regard to the water rights that each country may have from that river. By developing this particular Niagara development, so-called Sir Adam Beck 3, we will be taking advantage of, I am not sure that it is our full right but close to it. You may not know that there is a very large storage reservoir behind the Sir Adam Beck 2 generating station.

Mr. McGuigan: That is where you are pumping the water out, is it?

Mr. Penn: Yes. In the case of this plant, we would take water from above the Canadian Falls, close to our present intake for Sir Adam Beck 2. We would bore two 12-metre tunnels for the water to flow from that point into the storage reservoir, and the reservoir would fill because the amount of water we have does not allow us to run even the generating station at Niagara Falls. It is a peaking situation we are talking about. We store the energy in the water and then, as the system calls on demand, we allow that water storage to flow through the hydraulic turbines.

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Mr. McConnell: In answer to part of your question, Mr. McGuigan, there is a treaty that was developed at the middle of this century between the United States and Canada having to do with the sharing of the waters that are coming down through the Great Lakes and through Niagara Falls. That treaty nominally requires that there be a minimum flow going over the falls all of the time during the period in which people are looking at the falls.

Mr. McGuigan: Can I just stop you there? I wondered if that minimum was included in the capacity.

Mr. McConnell: With this development, those minimums will still be met. In other words, we are not doing anything that will in any way detract from those agreements that there have to be minimum flows going over the falls. The minimums vary in time intervals in which there is a tourist season and when there is not, but there is always a minimum flow all of the time.

What we are trying to do with this development is to make sure that all of Ontario's or Canada's rights are fully utilized. At the present time, we have some water rights we are not quite fully utilizing, so we want to take advantage of that water. OK?

Mr. McGuigan: I guess the old maxim applies: Use it or lose it.

Mr. McConnell: Yes, we use it or lose it, because the Americans are using all of theirs. There will be a review around the end of the century of that treaty, so we want to be in a position of using it.

Second, the water we are using now we are not using as efficiently as we would like to. In other words, the electricity is being generated in some plant that is old and inefficient.

In essence, what Mr. Penn was talking about is that we have two fairly modern plants—I should not say “modern”—we have two plants that are quite efficient: Sir Adam Beck 1 and Sir Adam

Beck 2. Instead of just using the head over the falls, they use the head over the falls but also the head down through the gorge. We get a lot more electricity by using the head from the top of Niagara Falls to well down along the gorge.

In order to do that, you have to build these big tunnels under the city of Niagara Falls, so we are talking about two more big, fat tunnels well down below the city, 11 metres in diameter, and this would be a new station called Sir Adam Beck 3, just downstream of Sir Adam Beck 1. It gets the full head and that plant would have a capacity of something like 750 megawatts, but because we are taking some capacity out of service, it gives us a net increase of only 532 megawatts. It does not have a lot of energy associated with it, unfortunately.

Mr. McGuigan: I have a hard time understanding why we get only 116, as an average, out of that.

Mr. McConnell: There is not enough water if we honour the commitments for the water to go over the falls. All we are doing is taking advantage of the water we are not now using, and that is very limited, and the water we are already using which we are going to use it a little bit more efficiently. So that is the net improvement.

Mr. McGuigan: I think you have proved the point I was trying to get at. In that 532 capacity, you have included water that is there for people to look at.

Mr. McConnell: No, that water that the people look at is totally independent. That is not included in that at all. This 116 megawatts would come from the water that we have rights to.

Mr. Matrondola: I am just wondering, Mr. McConnell, if there is enough water in the falls for all that. For a pipe that is 10 metres in diameter the capacity is more than what this room would take; it is considerably more.

Mr. McConnell: Twelve metres.

Mr. Matrondola: Twelve metres would be almost 40 feet in diameter, which really would be more.

Mr. McConnell: Two of them, and they would be about 10 kilometres long.

Mr. Matrondola: Yes, I am well aware of these things. I am a former electrician myself, so I am well aware.

Mr. McConnell: They are big pipes.

Mr. Penn: There has been discussion, although the matter has not gone far enough yet, Mr. McGuigan, to use more water at night in the middle of winter, the reason being that the spray

from the falls at that time of year can often be hazardous and that it would not detract from the appearance of the falls. But that is far from being settled.

Mr. McGuigan: There are not quite as many tourists at that time of year either.

Mr. Penn: No.

Mr. McGuigan: That makes sense.

Mr. McConnell: It is a matter of some public sensitivity, destroying the appearance of the beautiful falls, so we have to be very careful.

Mr. Penn: I have to admit to a small error in the printed material. On page 24 of the last presentation I gave, which is 11.5G so we are talking about figure 11.5G-12, we have a typing error. The projected in-service date for Niagara development, of course, is November 1998. The text is right, but we have a slip. We cannot do it by November of this year.

Mr. Chairman: Thank you, Mr. Penn. Are there any further questions on this section?

Mr. McConnell: I presume that people are aware that we do not have approval on that Niagara yet, that it is a proposal on our part.

Mr. Brown: I was wondering, because most of the hydroelectric power is generated in northern Ontario, what the demand is in northern Ontario? Would we be net importers of electricity into northern Ontario or exporters of hydroelectric?

Mr. McConnell: First, the majority of the remaining development which is economic would be in northern Ontario. In so far as that which is already developed is concerned, the major generation we have is at places like Niagara Falls and at the Saunders station, which are in southern Ontario, and it is a matter of definition on your part whether the plants on the Ottawa River are in northern or southern Ontario. I do not know where you regard Ottawa, for example.

Mr. Brown: Southern Ontario.

Mr. McConnell: At any rate, a good percentage of the power we have now is in southern Ontario. However, I think Mr. Marriage talked about the fact that it is not unusual for us to be shipping power north in order to meet requirements in northeastern Ontario, and we would expect situations also will exist where we would be shipping power from the north to the south.

Mr. Brown: I was thinking, though, of the net. I realize—

Mr. Snelson: I addressed this question recently for the northern Ontario advisory com-

mittee, which the government has set up to advise the Ontario Hydro board. The result is that in terms of hydraulic capacity in northern Ontario, there is not enough capacity or enough energy to meet northern requirements in hydraulic. If you add in the capacity of the thermal plants in northwestern Ontario at Thunder Bay and Atikokan, then it gets close to being able to meet its peak capacity requirements, but because the hydraulic energy has a lot of peaking plant, it cannot meet its full energy requirements.

Mr. Brown: So we are normally shipping—

Mr. Snelson: We ship north more often than we ship south.

Mr. Chairman: Thank you, Mr. Brown.

Mr. Cureatz, your timing is impeccable.

Mr. Cureatz: I have heard.

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Mr. McConnell: If we were to open a large plant in the north, then we would reverse that situation, and that is one of the options that exists.

Mr. Chairman: As I was noting, Mr. Cureatz, your timing is impeccable. We are about to start your favourite subject: maintaining Candu.

Mr. Penn, would you come forward?

Mr. Cureatz: I can only say that, interestingly enough, after my headline press in the Oshawa Times of my support for a Darlington B, there are already, Mr. McConnell, letters to the editor condemning my stance on the possibility of a Darlington B, so there is swift reaction.

Mrs. Grier: Sanity prevails.

Mr. Penn: We now turn to presentation 11.5H, the Candu nuclear option. With your indulgence, what I would like to do in this presentation is go through the following six items.

I will start by stating the strategy element to maintain the Candu nuclear option for our future consideration. I would then like to discuss with you public views on nuclear power, followed by a few slides on the actual performance of our Candu stations since the early 1970s.

I would then like to briefly address—and it is unfortunate in a subject as large as Candu nuclear power that I have to confine myself to 20 minutes or so—but I would like to speak specifically about two public safety concerns and follow that by providing for you some information on the cumulative benefits to our province from our nuclear program and those projected for the future, and then end by telling you what is

involved in maintaining this option and how it might be done.

Let us move to the actual strategy element, 5.8, which reads, "Ontario Hydro will seek to maintain Candu nuclear so that it is available for future development."

There are a variety of views, of course, on the subject of nuclear power. On the one hand, public views range from strong support for the high benefits it brings to the province to genuine concerns. The most often mentioned concerns are public safety and disposal of radioactive waste.

Supporters point to Candu nuclear electricity in terms of a highly reliable, long-term, low-cost, major source of supply, with little or no environmental impact during its operation. Pride is expressed that the Candu is a totally Canadian achievement. The stations have very high Ontario content in terms of jobs and industry, and there have been major benefits to our province's balance of trade. Supporters also note the impressive 30-year safety record.

However, people are concerned about the potential safety of nuclear reactors, particularly in the light of the accidents which occurred at Three Mile Island generating station in the United States and at Chernobyl in the USSR. Public concern also exists regarding the environmental impacts of disposing of radioactive waste over long periods of time.

Critics of nuclear power in Ontario often question whether the system is as economic as claimed. Some critics question the adequacy of costs included for decommissioning nuclear plant, for pressure tube replacement and for irradiated waste disposal. We certainly welcome the inquiry that the Minister of Energy has proposed should proceed, to be able to discuss these and other matters that contribute to the total cost of nuclear power and the generation of electricity.

I might mention that at the Ontario Energy Board, since the early 1980s—in sworn evidence, of course, testimony—the subjects of decommissioning nuclear plant, irradiated fuel waste management and disposal, pressure tubes and the like have been discussed in detail.

What I propose to do is now look at the actual performance that we have experienced in a number of key areas during its operation. I would like to start—and perhaps this is somewhat repetitive of earlier presentations—by just talking about what is the extent of our program today—actually these figures are for 1987—in comparison with other base load supply methods

of hydraulic generation and various fossil-fired generation. You can see that of the 29.4 gigawatts of installed capacity, counting everything, including all that is mothballed as well, nuclear amounts to a third, 33 per cent in 1987, of the installed capacity.

Below we see that in terms of energy that 33 per cent capacity generated 51 per cent of the kilowatt-hours that came to our customers. Since I do not know whether we have given this information completely before in this hearing, we will note that Hydro generates 30 per cent and fossil 18 per cent. Our purchases amounted to three per cent in 1987 and our sales two per cent on the other side of the balance, for a total of 100.

That is the extent of Hydro's nuclear program. It includes 16 operating units; four, as you know, still under construction at Darlington. Unit 2 at Darlington is planned to become critical this fall.

Candus, together with our hydroelectric plants, supply the base load electricity to the province throughout the year. Candu reactors use natural uranium, unlike other reactor systems in the world, mined in Ontario and Saskatchewan. Indeed, the richest ore bodies of uranium in the world are to be found in Saskatchewan.

When we have Darlington's four units in service by 1993, Candu stations are expected to meet 65 per cent of our province's requirement for electricity, although, if we do not build any more nuclear, that percentage will steadily decline in subsequent years.

Moving to another performance fact, I would like to now talk briefly about public safety that we have actually experienced. We now have 156 reactor years of operating experience under our belts. There has never been a radioactive-related fatality or injury to any member of the public in Ontario or Canada.

The radioactive risk criteria have been fully met every year at every station. Radioactive releases are below one per cent of the annual regulatory derived emission limit. When we talk about derived emission limits, you have to realize that there are different isotopes with different half-lives and different forms of radiation, so you have to come up with what is called a derived, a composite, if you like, emission limit, which is set by international standards, the International Atomic Energy Agency, and, of course, adopted by the Atomic Energy Control Board.

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In summary, the province has had excellent public safety performance. This performance is of paramount importance to Ontario Hydro staff,

the Atomic Energy Control Board, provincial ministries, the Canadian nuclear industry and, of course, all of us. It is of paramount importance, and we are not taking the future for granted. We must ensure that public risk is kept to a minimum, and this is the highest priority.

Although nuclear power cannot be assumed to be risk-free in the future—and that is true of every human endeavour—we have every reason to believe that the total public risk from Candu nuclear power will continue to be lower than most, or all, energy alternatives. We expect continued public concern, and it is a major challenge to all of us to renew and sustain public acceptance and confidence in nuclear safety.

I will talk now a little bit about worker safety in Ontario's nuclear program. Not counting the designers and the analysts and the administrators at head office and elsewhere but just counting the operating hours, we have now had at our stations, since they started operating—and I am going back, really, to Douglas Point in the 1960s—145 million person-hours.

We have never had a fatality. We have never had a radiation injury. Our safety record in our nuclear plants is better than hydraulic and coal. Even though they have been good, they have not been as good as nuclear. I think we can claim, although some people might dispute it, that we have a better safety record in operating our nuclear plants than any other major industry in Canada.

In fact, our reviews have shown that our employees are much safer in the plant than they are at home. The reason is that worker safety in the nuclear stations is strictly controlled. Every move that is taken is done by written procedure. It is done through continuous training, monitoring what people are doing, and vigilance. The plant design and construction methods are subject to rigorous quality engineering and control audits.

Let's turn now to environmental protection. Candu reactors are contained plants. They have a containment system, and within that containment system are effluent and gaseous recovery systems. Apart from the safety of workers and operators, the reason for these recovery systems within this containment was originally, in some cases, associated with recovering heavy water spills. When we started in this program, heavy water being a very expensive product we had to recover it to ensure economic operation.

That is a typical example of the types of effluent and gaseous recovery systems. Within the containment barriers are multiple and diverse

systems to prevent significant radioactive product release if an accident occurs and contain it within the station.

As I mentioned, our radiological emission standards are set very conservatively. They fall within the international and Canadian standards and are regulated by the Atomic Energy Control Board of Canada. Emissions have never exceeded these standards.

Environmentally, Candu is a canned plant. It retains itself, and the performance with regard to emissions during operation have been excellent in this regard.

Ontario Hydro reports to the Ontario Energy Board on all Candu cost components: capital, fuel cycle, operating, decommissioning and irradiated fuel disposal.

We have compared the cost to build and operate multi-unit Candu nuclear with conventional coal-fired stations. Including all costs, base load nuclear, with an 80 per cent capacity factor, shows a greater than 30 per cent advantage over new coal-fired stations using scrubbers and US imported coal. If we make the comparison with western coal from Alberta, then the cost advantage of nuclear rises to over 50 per cent, the reason being that the large portion of the cost of coal from the west is in transportation.

Recent studies have shown that the lifetime unit energy costs of remaining hydroelectric resources, which I have just spoken to, are considerably higher than the lifetime costs of new Candu supply on a kilowatt-hour basis: typically, one and a half times.

I would like to move now to about the fourth topic in my introductory list and talk about nuclear safety for about a minute. Nuclear safety is of paramount importance to all of us. As owner, Ontario Hydro has the prime responsibility to ensure that all aspects—research, analysis, design, construction, operation and testing—are fully and effectively performed.

Hydro carries out this role on a continuous, dedicated basis. Risks are minimized and consequences of accidents limited to within the station. We are continuously working to reduce the probability of events. Typically, the goal is—and we achieve it—to reduce the probability of serious consequence to less than one chance in a million.

The Atomic Energy Control Board regulates and continuously audits safety. It does so in our stations. It has staff continually there. There is one fact that I think is most important and perhaps not well known. The Atomic Energy Control Act, which the Atomic Energy Control Board uses to regulate nuclear safety, has the

widest power in federal law. In fact, decisions made under that act are not subject to legal appeal. This is quite a different situation from the one in the United States.

In recent years there have been three major public reviews of the nuclear safety of Ontario's Candus. They are the Royal Commission on Electric Power Planning, known as the Porter commission, the select committee review we held here after the Three Mile Island accident and the more recent Ontario Nuclear Safety Review chaired by Professor Hare. In a nutshell, these commissions found Candus acceptably safe.

There are so many things you can say about nuclear safety, but I think it is worth reminding ourselves of the primary conclusion that Professor Hare reached:

"The Ontario Hydro reactors are being operated safely and at high standards of technical performance. No significant adverse impact has been detected in either the workforce or the public. The risk of accidents serious enough to affect the public adversely can never be zero, but is very remote."

Turning to irradiated fuel management and its disposal, in 1978 agreement was reached between our federal government and this provincial government on the split in responsibilities for dealing with and the final disposal of irradiated fuel. Ontario Hydro, on behalf of the provincial government of Ontario, is responsible for the interim storage of irradiated fuel, that which is removed from our reactors. Ontario Hydro is also responsible for the transportation of that irradiated fuel from our stations, when it is subsequently required, to the final disposal site.

We have done extensive work in Canada to show that irradiated fuel can be safely stored at our stations under water for more than 50 years. We have also shown that in the interim they can be stored in air storage containers at stations for as long as 100 years if necessary.

Atomic Energy Canada Ltd., on behalf of the federal government, is responsible under the 1978 agreement for the design of waste immobilization and the final disposal facility. Extensive studies and experiments have shown that the reference method that was adopted in the early 1980s, that is the burial of irradiated fuel in pluton rock 1,000 metres underground and with multiple barriers and hydrostatic protection, is technically feasible.

We have made provision for the costs of disposal of all irradiated fuel accumulated in our stations to date. This is subject to annual review by the Ontario Energy Board. Recently, the

federal minister, Marcel Masse, has identified a process for a joint Canada-Ontario public review of the technical feasibility of the reference disposal facility and alternatives. This review of the concept is expected to start in 1991.

Following that review and assuming that the federal Ministry of the Environment, which in essence has the prime responsibility, gives approval for the concept, it would be followed by site selection studies on locating a suitable site or alternatives, presumably within Ontario. This would be followed by a public review under the provincial Environmental Assessment Act. Once that had occurred, and given that approval to proceed was obtained, the facility would then be built. It would take probably eight or 10 years to build it. The earliest possible in-service is after 2010 and is currently considered to be nearer 2025. We would be pleased to make a presentation on this very extensive subject if the committee would like us to do so.

I want to quickly now, because I can see, Mr. Chairman, I am overstaying my time, look at the benefits that Ontario has obtained from Candu. This chart compares the benefits we have received in terms of that which we would not have got if we had generated electricity from coal-fired stations using US imported coal and if we had scrubbers on those plants. It also assumes—as you can see, the benefits are projected to 2010 or about the sunset of this planning strategy—that no new nuclear is built following Darlington.

What it says is that to 1986 there has been an accumulative reduction of \$2 billion in electricity generation costs and a nine per cent reduction in rates with a net saving of approximately \$1 billion per year expected during the next decade. There has been an \$8-billion reduction in cost of imported fuels, i.e. US coal. There has been as a result of the presence of the nuclear program, a reduction of 2 million tonnes in SO₂ and NO_x emissions. There has been a 36 per cent reduction in foreign content of primary electricity.

We have shown you this curve before, but we feel it is worth making a point with regard to it in terms of the nuclear program in Ontario.

1440

This, of course, shows the price to the consumer of electricity in Canadian cents per kilowatt-hour between the years 1950 and 1987, comparing the average costs in the United States with the average costs in Ontario. It is based upon the actual rates and the exchange rate every year in each of the two countries. As has been noted before, from 1973 onwards, there has been a

divergence in the price to customers and it is now approximately twice the cost in the United States that it is in Ontario.

The reasons for this are many, but there are two particular reasons that I would like to mention.

The Candu costs in Ontario are much lower than the nuclear costs in the United States, they are much lower than the coal costs in the United States, and they are much lower than the oil costs in the United States. Most electricity in the US, as Mr. McConnell mentioned this morning, is generated from oil, coal and nuclear.

Another reason for the divergence has been Ontario's investment in its hydraulic program.

There are two more slides before I stop.

Candu is an indigenous industry. It is a totally Canadian technical achievement. With regard to jobs in Ontario, if you look at the design of the plants and their construction, there is 85 per cent in Ontario and 93 per cent in Canada as a whole. If you look at the lifetime jobs associated with Candu, and therefore add the operational jobs, the numbers are 93 per cent in Ontario and 95 per cent in Canada.

It uses an abundant indigenous fuel, uranium.

One other point that may be of interest to you: Candu reactors are uniquely suited to the irradiation of cobalt for medical purposes, for the treatment of cancer. Ontario reactors supply 90 per cent of the world needs in that regard.

Last, if we agree to maintain Candu as an option for future consideration in our electricity supply, how much will it cost and what is involved? We advise that the cost of maintaining the option is relatively low. We will have 20 operating units that must be maintained at high capacity, high reliability and safely. That in itself will allow us to maintain knowledge and capability in our industry in Ontario. There is some manufacturing capability that needs to be protected. There are two unique products, fueling machines and pressure tubes.

Thank you, Mr. Chairman.

Mr. Matrundola: I was wondering if you could give us some explanation of the concern that we frequently hear about problems or potential problems in a Candu nuclear power plant: radioactivity, nuclear waste in Scarborough, the Chernobyl problem and so forth. I was wondering if you could give us some information about these concerns that the public frequently have.

Mr. Penn: Briefly, I would suggest that first, by law, we are required to report every event that happens in a nuclear station. These events, of

course, are put in reports and reviewed with the Atomic Energy Control Board staff. They are also available to the public and the media. Nuclear power is very newsworthy, and that is one of the reasons I would offer for the matter being regularly in the public mind.

Mr. McConnell: I am not too sure, Mr. Matrundola, exactly what you were requesting, but Mr. Penn's presentation has indicated that in so far as our performance is concerned, we have an immaculate record. That is to say, no member of the public has been killed, no member of the public has been injured and the nuclear industry enjoys a much higher public safety record than any other form of energy in the world as far as the Candu system is concerned.

You did mention Three Mile Island and Chernobyl, and those were mentioned in Mr. Penn's presentation. I was not too sure whether you were asking us to describe what happened at Chernobyl or Three Mile Island or not. That is not an easy thing to do in a minute.

I think it is well known that there were people killed at Chernobyl. People such as the firemen, who came in to fight the fire that was there, were killed by fire. There were some very serious radiation exposures that the workers at Chernobyl suffered. There were some concerns about the spread of radioactivity over a long range. Of course, it would take some time to give you an in-depth appreciation of that. I do not know of any simple way to encapsulate that, but that was a serious accident.

Of course, as a part of our process, we have taken and evaluated that accident very carefully and then asked ourselves, "Was there anything learned there that would apply to Ontario and should there be any adjustments made to our program?" We have done that.

Mr. Matrundola: I must say honestly that after this presentation, a lot of fears that I had about nuclear power have been cleared now. I must indeed commend Ontario Hydro for the high degree of safety that you have had so far. I hope that will continue on the same note in the future. I am satisfied with your answer for the time being. Thank you very much.

Mr. Chairman: Noting the hour and the temperature of the room, I would propose to adjourn until 3:30 p.m. and pick up with Mr. Cureatz.

Mr. Cureatz: I can hardly wait to start off.

Mr. Chairman: I thought you might be able to contain yourself for 30 minutes. Perhaps I have a sadistic trait that I am allowing to express

itself against you, but perhaps we could adjourn until 3:30 p.m.

The committee recessed at 2:48 p.m.

1530

Mr. Chairman: Could I call the late afternoon session to order, please? Mr. Charlton.

Mr. Charlton: I have a very brief question, first of all, to the Hydro officials and then to the rest of the members of the committee. I am just wondering if anyone has any objection to my research assistant joining us for the tour tomorrow.

Mr. McConnell: At Ontario Hydro we do not have any objection to whomever you wish to bring.

Mr. Chairman: I see no objection from the committee, Mr. Charlton.

Mr. Charlton: Thank you.

Mr. Cureatz: Oh, good. I am on. Of course, might I begin by stating that as my colleague, Jim McGuigan, indicated earlier, although he spoke as the government member, and it just seems like yesterday when I was one of those, but as time progresses, I am not even an opposition member any more. I am a third-party member, but that does not mean my sincerity—

Mr. South: How the mighty have fallen.

Mr. Cureatz: I am still here—my sincerity is not any lessened by those political tragedies that have taken place in Ontario. With that in mind—

Mr. South: It builds character.

Mr. Cureatz: That is why I got re-elected because I thought I had it. With that in mind, and with the unfortunate situation of me not being able to grace this committee for any longer than this afternoon because, in the wisdom of our esteemed leader, I will have to be travelling the province of Ontario with the standing committee on the administration of justice and making havoc for the Liberals over Sunday shopping, of which I will be—

Mrs. Marland: Now I was there in caucus when you asked for that.

Mr. Cureatz: That is right, Margaret. I forgot you were there over that little discussion.

Mrs. Marland: Because I wanted it.

Mr. Cureatz: Yes.

Interjection.

Mrs. Marland: Fortunately my Hansard light was not on.

Mr. Cureatz: No. However, to the Hydro officials, as always, you have done a superb job. I, for one, again appreciate the opportunity to

listen to your presentation. Interestingly enough, I have to say this to all the newcomers of the committee, and mostly Liberals I guess, that I think they have taken their responsibilities very seriously and you have done not a bad job in convincing them in terms of how you look at the general situation. We will see, with great interest, what the committee finally reports and whether the real power will come forward with a direction that will be copacetic to your way of thinking or not.

Now, more particularly, with regard to nuclear power, I know a former colleague of mine, George Ashe, would say before we get into the hysteria of questioning from the third party, I would never stoop so low and merely say, before we get into the more objective questioning of the third party, I am wondering if I can dally back to a little concern of mine. I might say too, by the way, over the 10 years I have sat on the committee, once it started you have not changed much in terms of direction of your nuclear approach. I was thinking during the break whether I felt comfortable about that or not. I suppose in one aspect it is reassuring that you have had it down pat pretty well and things seem to be progressing as they should. On the other hand, I do not know if one should worry sometimes that maybe things should be better and you should always be looking for new and innovative approaches that maybe you have not stumbled across. I do not know, maybe you would like just to comment on that.

On a practical basis, one little item: I had asked about the assessment value of plants in communities, I think under the Power Corporation Act, I do not have the section. It was subsection 47(3), but that might be the old act. The grant in lieu of taxes is valued at \$8 a square foot on the building housing the transformers, machines in relation to the production of electricity and ancillary machines.

I know what you are going to say, but I am just wondering if you feel in your estimation, if you are giving a grant in lieu of taxes on the assessed value of \$8 a square foot—we all sort of have a general handle on what Darlington is costing us—the \$8 a square foot no doubt is not a true value reflective of the cost of building the station or the other stations at Pickering and Kincardine. As a result, would that not direct you to think that if you are going to go that route, then we should have a closer-to-fair-market value of what it costs to build the plant and hence that would be reflected in what a municipality would obtain in a tax grant?

Now if I did not express it before, I say that thinking only in terms of where a municipality becomes the host community of a nuclear plant. I say to my friends to the immediate right that from time to time they have pointed out some concerns. There is a large lobby of people in the province also concerned along those lines. If the host community accepts the responsibility of such a plant, then there should be in return to the host community of—what else?—a monetary reflection of taking on that responsibility, so that the community can do what it desires with the money, one aspect of which may be to keep taxes down.

I know that in terms of the region of Durham and the town of Newcastle, you have entered into a Hydro agreement to try to offset the impact of the station. I am wondering if one might come to a better step-by-step procedure, maybe following the lines of updating the Power Corporation Act on a closer assessment of what the true cost is per square foot as opposed to what the act apparently says.

Mr. McConnell: Mr. Cureatz, I do not believe there is anyone on this panel who is qualified to talk about the application in any definitiveness with regard to the grant in lieu of taxes, but if you could give us the wording of your question, I would be quite prepared to undertake to get an answer for you.

Mr. Cureatz: All right.

Mr. McConnell: Is that OK?

Mr. Cureatz: Yes, that will be fine.

Mr. McConnell: You were wanting to know about grant in lieu of taxes as applied to Pickering and Darlington.

Mr. Cureatz: And Kincardine.

Mr. McConnell: And Bruce?

Mr. Cureatz: This is what the question is: What is the grant in lieu of taxes and is it not based on the Power Corporation Act, an assessed value of \$8 a square foot; and in regard to Darlington, do you have that assessed value? I suppose it is taking the square footage of whatever the buildings are times \$8 a square foot, compared actually to what the true cost is of building the buildings. That is what I am trying to get at.

Mr. McConnell: OK.

Mr. Cureatz: It has been pointed out to the minister that there is a huge discrepancy.

Mr. McConnell: OK. Could you just write that down on a piece of paper for us so that we have your question precisely.

Mr. Cureatz: Yes.

Mr. McConnell: Then I will turn that question over to our real estate and services division that administers the grant-in-lieu-of-taxes process and we will prepare a written answer for you, or for that matter I could have someone personally contact you if you prefer that.

Mr. Cureatz: No, in writing would be fine.

Mr. McConnell: OK.

Mr. Cureatz: Now what about just sort of my general thought in terms of your presentation, that it has not changed, and do you feel comfortable with that? I guess the answer is yes, you do, but have you thought about that? Are you continually vigilant about your approach on nuclear power?

Mr. McConnell: Yes. I think in Mr. Penn's presentation we talked about continued vigilance and not taking our track record for granted in the future. I think that is important. In your commentary, you touched along the way on the issue that, on the one hand, it might be good, and that if we started off with something and it has worked well we not change it. On the other hand, you have touched on the fact that one should always be seeking to improve.

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Basically, if you took, for example, hydraulic power where you have water at an elevation and you are making electricity out of that, fundamentally, nothing has really changed in the last hundred years; that is to say, that elevated water, that potential energy, is, first of all, converted into kinetic energy, then that kinetic energy is transferred into the mechanical energy of a rotating shaft, and then that, in turn, induces electrical production in a generator. Those fundamentals have not changed, but the designs of the machines, making them more efficient and improving them, has taken place over the century.

I think it is also fair to say that as far as Candu is concerned, the fundamental concept of Candu, which features heavy water as a moderator, on-power fuelling that was described by Mr. Penn, and uses pressure tubes rather than pressure vessels—we do not have to worry about a failure because if you do not have a pressure vessel you do not have to worry about it failing, and that is the biggest concern that exists with light water reactors.

It is quite clear we are constantly looking for improvements in terms of ensuring quality, in terms of ensuring safety and also in terms of

lowering costs. Yes, we are, in the details, constantly pursuing a course of improvement; but also yes, as far as the basics are concerned they have remained steadfast over the last 30 years.

You may or may not be aware of this, but contrary to a lot of false impressions, when we conceived the Candu concept that was effectively enunciated in the year 1957, in that concept, and it is well documented, at that time the economic evaluation was based on the assumption that pressure tubes would have to be replaced during the lifetime of the generating station.

The first evaluations assumed pressure tube lifetimes of 15 years and our first evaluations were based upon a station lifetime of 30 years. Today, we are extremely confident that the station lifetime will be 40 years or longer, and of course, we have already exceeded the 15-year pressure tube lifetime. But there was a lot of talk in the newspapers because in the period between 1957 and 1983, when we had our first pressure tube failure, a lot of people had come to believe we did not have to replace these pressure tubes.

For the people working on the inside, that was not the case. We did have judgements along the way that perhaps we could get as much as 30 years. We do not have the confidence of 30 years today. We certainly have confidence that it will exceed 20 years. We are very confident that for a new power plant, we will have to change the pressure tubes only once. That is effectively the same position we had in 1957. I do not think that is commonly understood. That is not a new revelation as far as allowing for that in the costs is concerned. As Mr. Penn has indicated, we have that issue reviewed regularly.

As far as capital costs, operating and maintenance costs, and fueling costs are concerned, if people feel they are going to be able to drive a truck through our cost estimates, that in fact is just not going to be the case. Some people might find some tiny little nick where they can haggle about the costs of those basic issues a tiny bit one way or another. But we have massive evidence having to do with all of those things with which we have experience, and there is no question about it, we can estimate nuclear costs today basically more accurately than we can estimate the costs of a new hydraulic station, because every new hydraulic station is unique.

The two areas where we are vulnerable, in terms of people haggling about the costs, have to do with rad waste and decommissioning.

Mr. Cureatz: What kind of waste?

Mr. McConnell: Radioactive waste disposal. In that particular area, obviously, we had zero experience in 1957 when we did our estimates, but it is interesting that our cost experience today just happens to be almost virtually identical to the estimates we produced in 1957. That is more happenstance than it was good estimating in 1957, but it did happen to come out that way.

Unlike the Americans and unlike other countries, we have not had these radical changes in our cost estimates over the past 30 years. We have had estimates go up and down, but we have sensitivity analysis. As Bill Penn said in his presentation, if people want to come forward and challenge whether our costs are right or not, we welcome the opportunity to explain them because we explain them to dozens of people every year. In fact, the whole world has tramped to Canada to talk about our nuclear costs because we have the lowest nuclear costs in the world; no question about it. I would not want any doubt to exist in this committee about our confidence to appear before anyone to explain our nuclear costs.

On the other hand, we acknowledge without reservation that there is an uncertainty on those cost components we have not yet experienced, specifically decommissioning and rad waste. There we do sensitivity analysis. We can demonstrate that the costs are still viable, with a wide range of sensitivity analysis on those estimates.

Mr. Cureatz: I thank you for getting into that area. I was going to ask questions, but I will leave more detailed questioning to Mr. Charlton, who I am sure has more extensive concern than I do on that. As I recall, last week you mentioned that you have set aside \$540 million for the decommissioning aspects of a nuclear plant. Was that right?

Mr. McConnell: I believe we did give an estimate in the paper of the amount of money, the paper we gave in the—

Mr. Cureatz: Maybe I read it then. Does that mean the money is sitting somewhere in an account with the Royal Bank and you have interest building on it, or what?

Mr. McConnell: It is in Ontario Hydro's coffers. We naturally use it; it has been collected from our customers to deal with those future expenditures, to deal with that decommissioning and rad waste.

Mr. Penn: I might add that in 1987 we tabled before the Ontario Energy Board a detailed way in which we would decommission Pickering—

style reactors, which as you appreciate are different in structure from Bruce- and Darlington-style reactors.

Mr. Cureatz: Is that as thick as one of these binders or can you give us a little synopsis somewhere along the way, or send us one, because I do not remember seeing anything like that? I would be very interested.

Mr. Penn: No, you have not. I mentioned that these reports were tabled in front of the Ontario Energy Board in 1987 and they are the basis of the cost estimates of decommissioning these plants. The numbers are typically \$600 million in 1987 dollars for Pickering-style reactors.

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Mr. Cureatz: Four or eight units?

Mr. Penn: That is a four-unit station, Pickering A. Then there is another \$600 million for Pickering B. You have to remember that the reference method of doing it, which was formally adopted by the Ontario Energy Board in 1983 because of the importance of human beings and worker safety in doing the job, involves a 30-year period following cessation of operation where the plant is put in a safe storage mode. It will be environmentally protected in that period. The reason for that, of course, is that the innate radioactivity in the steels will have been reduced by a factor of 1,000 during that period of time.

The costs I speak about of course are highest for Darlington because it is a bigger plant and contains an unbelievable amount of concrete and reinforcing steel. The major difficulty is not taking the reactor down; it is taking the containment and the shielding down because of the enormity of it. Darlington is the highest. That is the basis.

The lessons we learned in taking apart the Pickering 1 and 2 reactors and rebuilding them was invaluable in learning or telling us how we would go about using today's technology to do the job. All I am trying to say to you is that there is tabled in the public forum a description of the methods and the basis for the costing in detail.

Mr. Snelson: Perhaps I could add one point. That is that the number was \$468 million that had been collected in provisions. This amount of money is included in the reported debt of Ontario Hydro. So it is treated, from accounting purposes, as though it is part of the debt. When you hear about our debt ratio, ratio of debt to assets and so on, that is treated as part of the debt.

Mr. Cureatz: I do not want to get right into the nitty-gritty of how you take it apart, but I did not realize that in Pickering 1 and 2 the outside

shield of the whole calandria was actually chiselled away and hauled away up to Kin-cardine.

Mr. Penn: No, you are quite right; it was not. But the technology and the remote tooling that would be the approach taken to take the reactor apart was part of the retubing of those reactors; at least a critical part of it.

Mr. McConnell: As I say, we are not totally without experience in the area. I participated and oversaw the rebuilding of the NRX reactor in 1953, so I personally have gone through doing it. I feel personally very comfortable that it is not an extraordinary engineering challenge. It is just one of those jobs that is done with care and somewhat tedious.

Mr. Cureatz: Decommissioning is only in regard to the nuclear instruments and not the whole plant in that you can rebuild the nuclear aspect?

Mr. McConnell: Are you talking about a plant where you rebuild the nuclear facility?

Mr. Cureatz: Or decommissioning a plant. Explain that to me. Does that mean the whole thing is entombed?

Mr. Penn: Maybe I can comment on that. The published approach to decommissioning a nuclear plant is to return the area to a green-field situation. There would be no structures left.

Mr. Cureatz: Have we worked out where we are going to put all the cement?

Mr. McConnell: Yes, the disposal of the material.

Mr. Cureatz: Where?

Mr. McConnell: The concrete is not a major problem. It is a landfill type of operation.

Mr. Cureatz: Oh, I know all about landfill sites. I think I will be long gone.

Mr. McConnell: Minute compared with the problems of Metro Toronto.

Mr. Penn: You are quite right, Mr. Cureatz, we will all be long gone. I think with the Pickering A station, the year is 2043 that the job will be started.

Mr. Cureatz: Two other comments, the first about the possibility of a significant nuclear incident, if I remember the terminology.

Mr. McConnell: Accident, if you prefer to call it that.

Mr. Cureatz: All right. A million to one, and if anything, I learned from all the other committees that we just cannot have an accident, not even a million to one. Along those lines—I

will conclude and you can respond to that—I am disappointed on the long-term storage of nuclear waste. I think I felt comfortable in past committees, where we had visited Whiteshell, Manitoba, and Atikokan, where they were doing test drills on pluton, that they were hoping for the year 2000 or 2005. I am disappointed that now we are talking 2025 and you have a greater amount of plutonium being stored on the various sites. That is it.

Mr. McConnell: I acknowledge what you are saying. The plutonium that exists is contained in the uranium bundle unless you were to chemically reprocess the bundle. At the present time, our reference program has not called for any chemical reprocessing. If you have a lead storage battery, an old battery out of your car sitting in your garage, that is just as serious for toxicity as the plutonium we are talking about.

Mr. Cureatz: I guess the people in the subdivision in Pickering are finding that out.

Mr. McConnell: Basically, the storage of the plutonium in the fuel bundle is technically not a major risk.

Mr. Cureatz: On the site?

Mr. McConnell: No.

Mr. Cureatz: Then what about the long term? I am surprised that it has been extended to 2025. I suppose we should have Atomic Energy of Canada Ltd. in front of us. Have they run into problems or is it finding the host community?

Mr. Penn: I should make sure that every member of the select committee understood what I meant to say.

The previous and the present date for in-service of this facility is 2010. More recently, we have reviewed all the necessary technological engineering that needs to be done and, more important, considered the practicality and the obvious deep interest of society in discussing whether the concept is adequate and which concept should be chosen by Canada.

After that stage, one must subject such a matter to the Environmental Assessment Act, which means you must have a range of alternative sites and you must do a full environmental assessment. Once you have done that, you have to build the facility. If you stand back pragmatically and think about those human processes, we have come to the conclusion that the chances of getting that all done and having the first fuel bundle in its depository and sealed before 2010 is unlikely.

When I mentioned 2025, I did not mean to say the facility definitely will not be in service until

that year; what I meant to indicate to you was the range of years beyond 2010 that now appear to be appropriate.

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Mr. Cureatz: Other committees have spent long, tortuous years over that sole problem of nuclear waste and nuclear power, so I will refrain from further questioning.

Mrs. Sullivan: I want to follow up on one question from Mr. Cureatz in relationship to the sinking fund. Did I understand you to say, as a result of the cost experience that you have had so far and the projections that you have made in relationship to the sinking fund, that you see no necessity for increasing the amount of moneys put into the sinking fund for decommissioning or disposal?

Mr. McConnell: We would expect the moneys that we are collecting from our customers each year to cover the radioactive waste disposal and to cover the decommissioning, but we expect those would be adjusted from time to time. In other words, the cost estimates are constantly being reviewed and constantly being adjusted; there is no reason why the numbers could not be increased upwards and there is no reason why the numbers could not be decreased. They are under regular review and debate each year in front of the Ontario Energy Board.

If we make a proposal to make an adjustment, that usually brings on another avalanche of debate and questions starting from square one. So, yes, I think adjustments would be made from year to year. At the beginning of this year, we commenced a review of these costs and that review is not yet complete. I expect we will be making some adjustments next year, one way or the other, because every time we do a review we end up with slightly different numbers than we had before. I think when we come forward with our plan next spring we will have adjusted the numbers a bit, but I do not know in what direction.

Mr. Penn: I might add that I fully expect the Ontario Energy Board to request a review of irradiated fuel management costs, and indeed at the hearing we told the board that we would be coming next year with a complete review of it.

Mrs. Sullivan: When you do your cost studies, for example, the studies that were included in the costing of representative plans, do you base those on the total capacity for nuclear or on the actual capacity of the plant?

Mr. McConnell: Perhaps Mr. Snelson can respond to that question.

Mr. Snelson: We base that on the expected capacity from the plants, together with an allowance for unavailability and reserve requirements that reflect the sort of reliability we expect to get from the plant. It takes into account the 80 per cent capacity factor sort of assumption and experience we have had that Mr. Penn was talking about.

Mrs. Sullivan: On the capacity factor Mr. Penn was talking about, while the average is at 80 per cent, indeed the chart shows that the actual is down, at about 77 per cent, and declining on an annual basis. I think he used the term "maintenance programs" as a rationale for that decline in capacity. I wonder if there would be an equivalent impact on the safety or emissions as a result of declining maintenance.

Mr. Penn: No. If you look at the reasons for unavailability of our nuclear plant, you will find that the majority of it is associated with the conventional site. We have had, from time to time, problems with the turbine generators. We have had problems, particularly with condensers, at Pickering. It seems, and we are not entirely sure why, that the cooling water from Lake Ontario is somewhat different from Lake Huron, and we have had some condenser problems.

Mrs. Grier: It must be downstream from Niagara.

Mr. Penn: It may be, although we have not detected pollutants as being the reason. And we have had problems with pumps.

Mrs. Sullivan: My last question really does not have an awful lot to do with DSPS. I am wondering, as Ontario Hydro is probably one of the world's experts in remote technology, if there is opportunity for sales that might ultimately impact on customer cost through making that available for industrial application?

Mr. Penn: I can give you one example. We have visited various United States companies at US utilities' invitation to develop for them remote tooling, based upon our experience. That is an example.

Mrs. Sullivan: Is there any spinoff for actual industrial use?

Mr. Penn: There may very well be, yes.

Mrs. Sullivan: That has not been looked at, at this point?

Mr. McConnell: What is the name of the organization with the space arm?

Mr. Penn: Spar Aerospace Ltd.

Mr. McConnell: Spar? That is an example of spinoff.

Mr. Penn: I think probably the greatest example of remote technology developed here in Ontario is the refuelling machines of our Candu reactors. They have operated almost faultlessly since the program started.

Mr. Charlton: I have a number of questions. A couple of them are just quick curiosity questions that come straight out of your presentation. In figure 11.5H-9, maybe I missed something when you were making your presentation. Can you basically just explain to me why—at least it appears so the way you have set this out—US coal generation is considerably cheaper than your own?

Mr. McConnell: The cost of coal in terms of fuelling cost is partly the cost of mining the coal and largely the cost of transporting the coal.

Mr. Charlton: Would the transportation of the coal make that much of a difference?

Mr. McConnell: The transportation of the coal, in the case of Ontario, is the dominant factor. If you, for example, were building a power plant to burn lignite in southern Saskatchewan and you build a power plant right on the top of the mine, your coal costs become extremely low and that produces power at a very favourable price. Similarly in Alberta, if you build your power plant right where the source of the fuel is, you avoid all that transportation cost. In our case, we do not have the coal in Ontario and typically we would have to haul that coal some 1,800 kilometres from the United States and an awful lot farther than that from western Canada. That is the dominant cost.

Mr. Charlton: Yes, I think I understand that. We did visit a couple of sites in Illinois, for example, where they had the power stations right on top of the coal mines. Just a facetious comment about that: the town where my father was born, Bathgate, Scotland, is built on top of the coal mines and the entire town is now sinking.

Mr. Snelson: I had a house that was due to go down eight feet in England.

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Mr. Charlton: I am not sure where this stands now, because we have not discussed it for a long time. There were some questions raised at the time it occurred. Two or three years ago, there was a major leak in one of the storage pools at Douglas Point. Could you update me on that and tell me if you have ever been able to determine

the cause of that, if I recall correctly fairly significant break in that facility?

Mr. McConnell: I do not remember by memory the details of that particular event. I do recall the event you are talking about, but I have forgotten exactly what year it was and what the details are. I would say I think you are aware that when we have instruments that can detect the presence of one atom, the techniques we use are extremely sensitive. The one thing I can assure you of is that the radioactivity which found its way into the public environment did meet what Mr. Penn was saying, that is was well below the one per cent of the very tight standards that we work to. I do not recall the details of that particular event.

Mr. Charlton: I do not recall all the details either. I have a file and I should have brought it with me. It was just a few moments ago that I remembered about that, when you were talking about fuel storage with Mr. Cureatz. That is why I do not have the file with me.

I recall that the actual release before discovery was, although significant, limited in the context you have stated. I think for some of us the major concern at the time was basically how a break that large could have happened, and the contention by yourselves, Atomic Energy of Canada Ltd. and others throughout the whole nuclear debate in Ontario that those facilities were built to an engineering standard to withstand an earthquake, and there certainly had not been anything of that magnitude in that area of the province. I was just curious to see if you had determined what in fact caused the problem.

Mr. McConnell: I do not recall the details of the event off the top of my head. As I say, I could not respond to that question right now. If you desire, we can go back and dig that out and give it to you.

Mr. Charlton: Anything you could provide us with on that issue would be helpful, I think, yes.

Mr. McConnell: OK.

Mr. Charlton: With regard to the issue of the tubes and their replacement, unlike what you felt was perhaps the view of a large number of people out there between 1957 and 1983 having either forgotten or blocked out of their minds that your original intention was to have to retube once, I am aware of that and aware that is part of the costing of your nuclear program.

In earlier comments, you suggested that in spite of the 1983 incident and the subsequent incidents relating to the tubes, you had a very

high level of confidence that even with the extended 40-year life of the Candu reactors you were going to be able to still get through the 40 years with one retubing.

I know Professor Hare was not commissioned to deal with that issue specifically. He was commissioned to deal with the overall question of nuclear safety, and that is what he basically dealt with in his report. But I sat here in this building the day he had his press conference, when he released the report, and listened to Kenneth Hare suggest, in a fairly confident and firm tone—just to use words that you use a lot—that in his view, Ontario Hydro did not have a solution to the tube problem and that the tube problem presented a major economic consequence for Ontario Hydro if it was not resolved. I would just like to hear your comments on that.

Mr. McConnell: I do not have any problem with that observation generally. I think I would articulate the words somewhat differently. We have a high confidence that we have the technology now to achieve, for the next reactor, an assurance that one retubing will be adequate for the next generating station, and doing further research and development and design work, represents an opportunity for us to further reduce the costs.

There is a large opportunity to further reduce the costs, so I do not have any disagreement with his observation that it is an area that requires major attention and is getting major attention and needs to get major attention, but I would express it that it represents an opportunity to improve. It is not a foundation that is essential in order to achieve the one retubing during the station lifetime.

Mr. Charlton: What about the part of his comment that if a solution is not found it holds out major economic consequences for Ontario Hydro?

Mr. McConnell: It has major consequences if you do not get that opportunity. On the other hand, our economics are not dependent upon our extending the tube life over the present technology.

For example, we have been struggling since 1900 to try to get longer lifetimes out of boiler tubes, and you cannot be surprised if you have to change the tubes in a coal-fired boiler after 10 or 12 years. So by and large, we will be pursuing that technology for a long time too.

Mr. Charlton: I think I understand your comment about extending the tube life. I took out of Mr. Hare's comment at that press conference—and we will have him before the committee and I

will be asking him about his comment—that if you did not resolve the problem as he identified it in discussions, obviously, with your technical staff when he was going through the process of confirming the safety of the Candu system, you could not meet the expectation which you have expressed to us of one retubing in a lifetime.

Mr. McConnell: I think you would have to ask him whether that was specifically what he meant or not. Setting aside what he said or what he meant, I would simply say that Ontario Hydro and Atomic Energy of Canada Ltd. are quite confident that on the next power plant we commit, there is a very high probability that it will have to be retubed once and that it would have to be retubed only once.

I might add to that, in our economic evaluations that we do in system planning we do a sensitivity analysis that assumes two retubings. In our system planning, we do do that kind of an evaluation. We do not have a rigid parameter.

Mr. Charlton: How long have you been doing that?

Mr. McConnell: The two-retubing sensitivity analysis? What year did we start that, Ken?

Mr. Snelson: I believe we did it last year for the first time.

Mr. Charlton: Moving to the issue of confidence, and more credibility if you like, and the view that you gentlemen have all expressed very well here that you believe the strategy is based on a sound footing—we hear it in almost every section we go through: you state the level of confidence you feel about this issue and that issue. We just went through it when you were making comments to Mr. Cureatz, for example, about some of the aspects of the Candu system and of the waste disposal question and so on.

As we have all had some fun with digging into Hansard, I have a Hansard here from the standing committee on Energy, Mines and Resources in Ottawa, last December when you, Mr. McConnell, were appearing before the committee.

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Mr. McConnell: That is correct, we did.

Mr. Charlton: The issues being raised with you—well, I will not go through the whole discussion, but there was a fairly lengthy set of questions around the cost of Darlington. At the end of that set of questions a Mr. Clay comes in and says, “Yes. As a follow-on, is there any further anticipated escalation in the cost of Darlington, or is your \$11 billion approximately considered to be—” I assume at that point you cut him off, because he does not say anything after

that and you come in and say, “Oh no, I think that is pretty firm.” My recollection is that just a few short months after that Hydro announced a \$500-million cost overrun at Darlington. Perhaps you would like to comment on that?

Mr. McConnell: I would have to go back and read the full context of what you are quoting but, basically, when we estimate at the commitment of any power plant, whether it be nuclear or coal-fired, there is an uncertainty about what the costs will be.

There is a degree of uncertainty about the capital cost, the initial capital cost, until in fact it is declared in service. There are a variety of factors that continue to bear on the capital cost. If one runs into problems such as strikes, that will tend to increase the costs. If there are planning delays, that will tend to increase the costs. If the interest rates change, that can cause the cost to go up or down rapidly and that is a very sensitive thing because interest on construction is a very major part of capital cost. Of course, if you have a lot of technical problems getting a plant running, that can affect things. Conversely, if you run into less trouble than you counted on, that can lower the cost.

Our confidence in terms of cost estimates for a future generating station, which was the focus of the hearing we were having with the committee, is that we do not go exclusively on the experience of one generating station. In other words, we have capital cost experience on the equivalent of 19 commercial nuclear units and it is that which gives us the base on which we can, say, prepare the median expectation of the cost for the next station. Darlington, in many respects, is not representative in terms of our nuclear program because in fact it was the station which was caught by the oil embargo upset. With most of the generating stations, both nuclear and coal-fired, which we built and got experience on, we did not go through that major planning upset.

Mr. Charlton: That is a fair comment, Mr. McConnell, and you do run through most of that here.

I guess my question really relates to the last part of it. That is the only reason I read only the last part of it because, as I said, you have gone through here the cost escalations that were associated with the planning delays and so on and so forth. In late summer or early fall of 1985, in the two-time-ago reincarnation of this select committee, the presentation—

Mr. McConnell: The fall of 1985, yes.

Mr. Charlton: —from Ontario Hydro pegged the cost of Darlington at \$10.9 billion. The cost

was the same all through 1986 and all through 1987, including your testimony here in December 1987, without any indications of cost escalation. Then all of a sudden, three or four months down the road, what happened? Where did the \$500 million come from?

Mr. McConnell: I do not know whether there is anyone here today. Have you got the cost review in your head? I do not have the cost review information in my head. I had no direct responsibility for that.

My recollection, though, is that we went down in the estimate for a period of time and then up again. I think there was one major reduction down but I have forgotten. I do not think there is anyone here today who was preparing those cost estimates.

Mr. Charlton: Fair enough.

Mr. McConnell: I do not have the data in my head. If a project like that has a 10 per cent variance, that is not a major deviation from the kind of thing we are used to. That frequently happens.

Mr. Penn: The only thing I would add is that during the period 1986-87, in my reviews with the project manager of Darlington, there were ups and downs in his estimate of the cost. They were able to be absorbed within his contingency that the plant estimate carried. The majority of the increase in costs recently are associated with a delay in the in-service of unit 2, which is the first unit in our stations that come into service. The vast majority of the cost increase is interest due to that delay in service.

All we can say about the reasons for that delay is that when you are getting very close to putting in a brand-new station, where you want to be absolutely certain that you have covered every eventuality and the system is fully reliable, there are circumstances in which we take decisions to not push the button now but to delay doing so. That is basically, as far as I am concerned, the reason.

Mr. Charlton: I think that is a fair comment as well. I guess the real concern here is not that there is ever going to be any plan or an estimator that gets away with not, from time to time, having to be faced with cost overruns. We see it all the time in all of our dealings with government, and with the private sector as well for that matter.

The concern starts to grow in somebody like me who is dealing with a committee like this which is looking at the questions of where we go for the future and dealing with questions of the

costs of the Candu nuclear system. You have a committee in Ottawa that was specifically looking at the economics of nuclear power in Canada and then you find that kind of discrepancy. You just get that kind of basic concern about just how firm things really are in terms of projecting them into the future.

Mr. McConnell: Basically, the data we gave the committee in Ottawa was our reference estimates for a plant committed at that time.

Mr. Charlton: I would like to go to Mr. Penn on this, although you may want to get back in as well, Mr. McConnell, because it is a question that I raised with you the other day in one of your presentations. It is the question of jobs again. I recall the other day in Mr. McConnell's presentation—I cannot remember the table number just off the top of my head, the table that showed percentages of jobs in Ontario, in Canada and outside of Canada that were associated with a number of the options. We had, at the top of the list, demand management options and nuclear. There were three or four options down the page.

You have given us a similar piece of documentation today, specifically related to nuclear, the Candu. Your numbers certainly appear similar, at least the total numbers, but I raise basically the same question I raised with Mr. McConnell. You are showing percentages here. In the case of the first example you show here, you have, "Design and construction jobs 85 per cent Ontarian, 93 per cent Canadian." When you add into that the operational jobs, you have, "93 per cent Ontarian, 95 per cent Canadian."

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Mr. Penn: Yes.

Mrs. Marland: What number is that?

Mr. Charlton: The table number is 11.5.H14.

At some point before the end of our hearings, can you provide us with any research you have done that would indicate, in a different way than this kind of percentage, the total jobs that end up here in the province, what the numbers of jobs are? I am not sure how to ask for that, whether it should be jobs per kilowatt-hour, jobs per kilowatt or jobs per megawatt, but some kind of a relational understanding, so when we are looking at the different options we can assess one of the criteria you have set out for us in this package of material you have given us. One of the things you want to consider is, what is the net jobs benefit of a particular option to Ontario.

I do not know if you have any research like that or not, but it would certainly be helpful to us if you could give us some numbers in terms of demand management options, in terms of the nuclear option, in terms of hydraulic and in terms of perhaps parallel generation or independent generation, so that we can do some relative looking in terms of questions around the economic impact for Ontario.

Mr. Snelson: Can I bring to your attention the figure 8.3 on page 8-10 of the DSPS document itself? That sort of double diagram has as the scale up the left-hand side employment in person years per terawatt-hour of electrical energy produced or saved in the case of demand management. You can see nuclear identified on there. Low-cost domestic fuel cogeneration scores very high in terms of employment, as does high-load-factor conservation, and other options score somewhat less intensively in terms of their overall employment impact.

This is not just the impact of the construction and operation of a plant during its lifetime. This includes secondary impacts on the economy and was developed by our economics and forecasts division. I do not know whether that helps you.

Mr. Charlton: It is a beginning; it is a start. I knew I had seen something like this before, but I could not remember where. We will obviously have some other presentations, and that is why we wanted it. We will have presentations by others who claim certain benefits. It is just nice to be able to compare how one group views a particular thing and how another group approaches that same question.

Mr. Penn: I would like to make perhaps a qualitative comment on this subject for everyone's benefit. If you think about the Darlington plant, the only really major equipment that is not made in Ontario or Canada is the turbine generator. We do not have the capability and industrial capacity to manufacture such a machine.

Mr. McConnell: We do part of it.

Mr. Penn: It is a Swiss machine, but it is assembled here in Ontario by a related company that Brown Boveri set up. Similarly, there are pumps made in Montreal, not in Ontario, but the bulk of the components and the actual construction work is all done here in this province.

Mr. Charlton: I think I understand that.

Mr. McConnell: I am not too sure, in view of the graph or the data on chapter 8, page 10, whether that meets your needs or not.

Mr. Charlton: It does not totally, but I would like to have a look at it and then perhaps I can pass a note to you.

Mr. McConnell: Perhaps you could let us know more definitively what would meet your needs, because we have the two sets of data.

Mr. Charlton: When I raised the question the other day, we got into this a bit. What I can see quickly from the graph are numbers of jobs and things like that, but I cannot compare the jobs.

One of your people mentioned the other day that there are wage rates. People do get paid different wage rates, and you cannot tell from that kind of a graph whether we are comparing in one scenario very high paying jobs as compared to very low paying jobs in another scenario. There is that kind of data, the specific kind of data, that are not reflected in the table, but I certainly have not had the opportunity in the last couple of minutes to read the surrounding material.

Mr. McConnell: I would caution you, sir, about attributing precision to this data of a few per cent. Basically, we are saying that if we build a coal-fired plant, 69 per cent of the jobs will be in the United States, even if it is located in Ontario. We are really trying to get across the basic bread-and-butter essence of these various alternatives, but we certainly did not intend to imply any number that was associated with a few per cent.

Mr. Charlton: The chairman is going to throw his gavel at me any minute, because I have been taking up a lot of time here. I think I understand that the basic numbers you have given us give you a basic perspective from which you look, but when you, for example, find demand management and nuclear so close in percentage of total content jobs here, then I think you want to start looking at the more detailed specifics. I guess that is what I am getting at. In general terms, you get a perspective that ends up being very close in percentage terms, and you want to start looking beyond that. That is all. I think I understand what you are saying between nuclear and coal and there are large discrepancies there.

Mr. McConnell: But the bottom line is that our strategy is quite clear that although they are both very high, we have said we are giving the demand management top priority, and so, "Do you agree with the strategy or not?" is one question you have to ask yourself. Does that change anything?

Mr. Charlton: It is hard to tell.

Mr. Richmond: Two small points with reference to Mr. Charlton's concern over the escalation on the cost of Darlington. If Darlington had been completed when it was first planned, in what were the original years before it was speeded up or slowed down, if it had been completed within that original schedule—is the fact that it had been slowed up and essentially slowed down a major reason the costs have escalated so?

Mr. McConnell: Yes, that is a major reason the costs were up, because with any power plant that you deliberately slow down and stretch out, you have the accumulating compounding interest on the investment and that then becomes a significant factor.

Mr. Richmond: And the station is not operating, so you have no revenues coming in.

Mr. McConnell: That is right; and you are obligated not to collect any money from your customer until you put it into service.

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Mr. Richmond: When was Darlington originally—

Mr. McConnell: It would be committed around 1978.

Mr. Snelson: I am speaking from memory here, but I think I am accurate. The original in-service date was that the first unit would have been in service in October 1985 and the remaining units would have come into service at nine-month intervals, which I think means it would have been completed very early in 1988. I think it was 1985 to 1989 for the first unit and four or five years for the subsequent units.

Mr. Argue: Supplementary.

Mr. Chairman: A brief one, please.

Mr. Argue: What was Darlington originally estimated to cost?

Mr. McConnell: Surprisingly, after all that massive data that we gave to the select committee in 1985, I have forgotten that number, because we had hundreds of numbers and I would have to go back and look it up, but it is all filed with the committee.

Mr. Argue: Would it be slightly less than \$4 billion, subject to check?

Mr. Snelson: I believe it was slightly over \$4 billion, but it was in that ball park. That was the design and construction cost excluding heavy water. Heavy water was on top of that and so was commissioning and training.

Mr. Chairman: I would remind the committee we have about an hour and a half worth of hearings still to go. If we could perhaps have briefer questions and answers, we might get on to some of the other subjects we would also like to cover.

Mr. South: Trying to summarize some of what we have heard this week: using all of our options, short of a large-scale nuclear or thermal plant or large-scale importation, and accepting a medium electrical demand growth rate, we will run out of options by the late 1990s?

Mr. McConnell: It is around 2002, I think.

Mr. Marriage: Yes, 2002, I think.

Mr. McConnell: When we will need a new major supply.

Mr. Marriage: That is with demand management, with some hydraulic nonutility generation.

Mr. South: But using all the options short of large-scale plant, short of large-scale importation, you will run out by 2002 with a median growth.

Mr. McConnell: It does not seem to matter what article I pick up, what newspaper article I read, there is a tendency both inside Hydro and outside Hydro for people to keep coming back and quoting a rigid view of the future corresponding to our median forecast. I would like to emphasize that there is zero chance of the median happening. The one thing we are certain of is that the median will not be right. What we really do not know is whether it is going to be higher than that or lower than that.

It is important that the committee does not get a fixation on the median forecast. If we fail to have a thinking process and a commitment process that does not give us the flexibility to meet the upper and the lower, then we are heading this province for trouble. We have to be thinking about having environmental assessments, and we have to be thinking about having plans that correspond to both the upper and the lower. We are not talking about that self-centred zero.

Mr. South: No.

Mr. McConnell: I only jumped on that, Larry, because you gave me the opportunity by emphasizing the median again. It is a valid question and it is also a caution: do not get fixed on that median.

Mr. South: What I am getting at is, does that not give the urgency that if something like a 12-year lead time is required for large-scale

plant, we then have to make a decision within the next two years on that large-scale plant?

Mr. McConnell: That is absolutely correct, and we stated at the outset in my opening remarks that we would be presenting evidence to you that an urgency existed. You have put your finger on that urgency in terms of the observation you have just made.

Mr. South: Yes. Thank you.

Mr. Brown: I will be brief. Just looking back at figure 11.5.H14 again, which shows Ontario Hydro's Canadian content and Ontario content within this option, the obvious pride of Ontario Hydro is that this is a socioeconomic benefit to Ontario. I have a question which you may not be too amazed at, as I am the member for Algoma-Manitoulin, and that is in regard to fuel supply.

What percentage of our uranium are we purchasing in Ontario at present?

Mr. McConnell: I think in my opening presentation I gave a number on that for the year 1986. I have forgotten what that number was, whether it was 20 per cent from Saskatchewan or not for 1986, but let me just see if I can quickly put my finger on that.

In the year 1986, there were 16 units of uranium from Ontario for two units from western Canada; that would have been two eightieths or 10 per cent. For 1987—I do not have the number in my head—my recollection was that due to the changing nature of contracts, it was closer, I believe, to 30 per cent of uranium from Saskatchewan, because I think we bought some short-term purchases of uranium at very low prices from Saskatchewan that increased it up to around 30 per cent.

I will undertake to get those numbers for you, but that is the number for 1986. It would be two eightieths from Saskatchewan, which would be roughly 10 per cent.

Mr. Brown: Does Ontario Hydro inventory uranium and at what levels would it do that? Obviously, you have to have some inventory.

Mr. McConnell: Yes. We have inventories of uranium. We have inventories of the milled product, inventories of the UO_2 ready for sintering and inventories of the finished fuel bundles for each generating station. We try to work out on a risk basis the optimum inventory to make in order to minimize the cost of power to our customer on the one hand and, on the other hand, to have what we call fuel supply security, so that if we had a long strike in any one segment

of the whole process, there would be no upset to electricity supply.

Mr. Brown: Could you give me an idea of what that might be?

Mr. McConnell: Of those inventories?

Mr. Brown: Is it a six-month inventory?

Mr. McConnell: I guess our finished fuel inventory would be on the order of six months.

Mr. Brown: Boy.

Mr. McConnell: Pardon?

Mr. Brown: I am just amazed at my guess. That is all.

Mr. McConnell: The finished fuel is on the order of six months. It used to be longer.

Mr. Penn: It is my recollection that the inventory varies. It can vary during the year. It varies anywhere between about six or seven months and just over a year.

Mr. Brown: Obviously Ontario Hydro is quite proud of the Ontario content in the options. What consideration is made when you are deciding on contracts to keep them in Ontario where the socioeconomic benefits have a great deal to do with our economy? Obviously, the lowest price is not necessarily the best to the economy of the province as a whole if we generate jobs, maintain an infrastructure and do those sorts of things. It may be cheaper to Ontario to pay a little more for uranium here.

I guess contract considerations, the length of time you can get a contract, fixed price and all those things enter into it, but what kind of considerations does Hydro make when purchasing? Are they just strictly economic; a straight "I can buy it for \$1 here and I have to pay \$1.05 there"? Are they those sorts of considerations?

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Mr. McConnell: Let us say that the most powerful factor in the letting of contracts has been to minimize the cost. Before these very rich strikes were found in Saskatchewan, we had in fact placed long-term contracts with supplies coming from northern Ontario.

When this very low cost uranium from Saskatchewan started to become available to us, that of course raised an awful lot of questions, on which we have had many hearings. We are driven, from a business point of view, towards minimizing the cost, but at the same time we are very conscious of employment in Elliot Lake. This has been a contributing factor to the decisions.

Mr. Brown: So you do take the socioeconomic factors into consideration?

Mr. McConnell: As a secondary consideration. Certainly, the price is a hard-driving factor.

Mrs. Grier: Let me just say that I think underlying all of my concerns about this whole part of the hearing is the whole question of the costs. I appreciate Mr. McConnell's spirited defence of Hydro's processes. I welcome the inquiry that the minister has ordered. We will leave it and look forward to that.

Let me try to explore a bit further the issue of radioactive risk. In the presentation, Mr. Penn said the radioactive risk criteria had been fully met at every station every year. Radioactive releases for Ontario stations had been less than one per cent of the annual regulatory derived emission limits. I would be interested in knowing precisely the nature of the kinds of releases.

Further on, you say there are no major emissions during generation or during operation. What are we talking about? What gets emitted from a nuclear plant and into what element? There is also the meaning of "annual regulatory derived emission limits." Who sets those various limits? How many of them are from Atomic Energy of Canada Ltd., how many are from the Ministry of Energy and how many of them are internal to Hydro?

Mr. Penn: I will try to answer those questions starting at the end. The Atomic Energy Control Board, based on the International Atomic Energy Agency recommendations, sets the limits that can occur under regulation, under law. It has nothing to do with AECL. Ontario Hydro has no role in setting those limits. They are entirely set at the discretion of the Atomic Energy Control Board, which reports directly to the federal minister of Energy, Mines and Resources.

I have used the words "derived emission limits," as I have tried to explain, because different effluents, whether they be liquid or gaseous, can contain radionuclides of different half-lives and different gamma or alpha or beta energy-emitting particles. Somehow one has to bring these all together so that you have one rule and not tens of rules for every situation.

That, in very simple terms, is what "derived emission limit unit" means, or DEL as we call it. The DEL is set by the Atomic Energy Control Board. We are very proud of this record that at every station, in every year, we have not materially exceeded one per cent, one one-hundredth, of that limit.

As far as what is the nature of the emissions, more often than not, because of the nature of heavy water, the nature of the emissions within

the atmosphere of the station, within the reactor building, would be tritium. Clearly, it is not impossible that pathways out of the system can occur. There are not releases, for example, of radioactive iodine because the fuel, if it becomes defective—in recent years, in fact since 1974 or so, we have had very few fuel defects, very few failures of fuel within our reactors. In fact, as I have said, there are internal systems that would collect radio-iodine and radio-caesium. I do not know if any other member of the panel can help me further.

Mr. McConnell: I think Mr. Penn, in his presentation, referred to the fact that we consider Candu as what is considered a canned plant; that is, basically, an ideal power plant would be if you took a sealed can and the only thing you had connected to it was an electric wire with electricity coming out. The Candu plant is very close to that.

The deviation from that which one has to consider is, is it possible for the radioactivity or some other toxic material to get from inside that can to the outer world. The outer world, basically, is the air, the land and the water. In order to have confidence that the design and the operation you have are continuously functioning requires the provision of monitors that ensure the environment is protected.

For example, it is necessary for power plants to be on a water body. Specifically, water is brought in from a lake or a river—for that matter, if you were not in Ontario, it might be on an ocean—to provide cooling water for the condensers, to provide water for a heat exchanger, or it could be to provide water for the showers for your staff and so on.

That means we have effluent water as well as influent water and we have radioactive monitors in each of our effluent water lines that operate continuously. As far as radioactivity moving from the power plant into the outer world by way of the water pathways is concerned, we have those continuous monitors.

Similarly, it is necessary to have some air taken into the power plant and it is also going out to the atmosphere. Those too have monitors that monitor for airborne radioactivity and those are continuously monitored.

Then there is the possibility that somewhere in your structure you might have something that was somehow or other seeping out. That means we have to have monitoring independent of those continuous monitors that is looking for something that is escaping into the environment through the land or into the neighbouring water.

For example, to make sure nothing is getting into the neighbouring water, we are constantly catching fish and other marine life and analysing all that to see if there is any change from the background.

Before we move to a power plant, we measure the radioactive levels. The whole world is radioactive to begin with. It always has been. We do these background assessments for several years before we start up a power plant so that we have those data to work with; basically, to make a long story short, to ensure there is no discernible change in the external environment as it was prior to the power plant starting.

1700

Mrs. Grier: Is all of that measuring and monitoring included in the statement that you have less than one per cent of the annual regulatory derived emission limits?

Mr. McConnell: That is correct.

Mrs. Grier: What kind of epidemiological studies have you done, or do you do, to support the statements on worker safety, on human safety?

Mr. McConnell: All Ontario Hydro workers who go into the nuclear field are in fact given an extraordinary number of medical tests to determine their situation, so that if some time in the future something comes along and somebody wonders whether something is happening, we have that benchmark information to compare it with.

This basically means we have established a database to determine, for example, statistically if there is any difference in the cancer rate, for the sake of argument, having to do with the human lungs, thyroid or some other gland in the body, whether for our employees it is different than for the population from which they come that are nonatomic energy workers.

Mrs. Grier: That is what I meant by epidemiological study.

Mr. McConnell: In turn, we compare that with other communities in which there is no nuclear power plant located at all.

We are doing these kinds of studies, and of course, what we do to put a stamp of independence on them is we have these all reviewed by people outside Ontario Hydro. Of course, we have to make sure that these are done and reviewed by people who are recognized in the medical field as expert in the subject of epidemiology.

We have a problem, quite honestly; what we call a healthy worker problem. Our fatalities, due

to things like cancer and so on, are lower than the average in the public. It is probably because of the healthy worker effect we have; in other words, these people, on the average, look after themselves better and we look after them better. They were probably a little bit healthier than the average when we hired them, so we have to be careful about making false claims that we are in fact lowering the cancer risk as a result of giving them a little bit of radiation.

Mrs. Grier: Do you track them after they leave your employ?

Mr. McConnell: We keep track of people who were former employees, but I could not give you a formal answer about the degree of tracking our medical services division is doing on ex-employees at this point. I do not have that in my head.

Mrs. Grier: Mrs. Marland says she has a supplementary to that one, but I have another one.

Mrs. Marland: When you are talking about employees, which this question is revolving around—well, employees and people living within the locale, I guess, is it, Mrs. Grier?

Mrs. Grier: No, I was talking particularly of workers.

Mrs. Marland: Has that medical services division of Hydro also done a study about the risk we have heard about recently to do with exposure to the transmission lines themselves?

Mr. McConnell: Yes, we call that BEEF; that is, the biological effect of electromagnetic fields.

Mrs. Marland: Is the concern real?

Mr. McConnell: I think we would have to say that we know that if there is an effect, it is extremely small. We cannot say, scientifically, that there is absolute proof there is no effect, and I doubt whether anybody would be able to make a claim that would be much more positive in the course of the next 20 years than the one I am making. It is an extremely difficult thing, but we are spending money. We have contracts out in which we are asking people to do studies. We have joined with Electricité de France in terms of doing studies having to do with our employees and so on. But if there were an effect, transmission lines are not the major concern.

Mrs. Grier: Can I ask one question about the disposal facility that was referred to in Mr. Penn's presentation? I just want to be quite clear on the status of that discussion. As I understand what you have said, the joint review is at this point looking at strategies for locating a site, and

that site would probably be in Ontario. Does that mean they have identified a number of sites and are examining them all?

Mr. Penn: No. Maybe I did not make myself clear. We are in the concept assessment phase of the disposal facility's preliminary design.

Mrs. Grier: A concept assessment is different from strategy, is it?

Mr. McConnell: Yes.

Mr. Penn: Yes. Let me try to be very specific. The reference facility that AECL proposed and the federal government accepted was entombment in pluton rock 1,000 metres down, etc. It is that engineering, in a conceptual sense, although there is a massive amount of detail, that will be the subject of a review led by Environment Canada. Mr. Masse has written to the provincial Minister of the Environment (Mr. Bradley) asking that the province jointly participate with this. This will be a hearing on the concept in front of independent technical advisers and will be subject to public discussion.

Once that is done, and we have decided, as a society, whether it is that reference method we are going to adopt or another alternative—there are several alternatives—then we would start reviewing possible locations for siting such a facility. We would have to do field studies, field work and communication with the local public, etc.

Mrs. Grier: Acceptance of that concept surely means somewhere on the Canadian Shield.

Mr. Penn: Yes, it does.

Mrs. Grier: Could I have a quick update on the status of the tritium removal facility and what part the anticipated revenues from sale of tritium play in any of the estimates or thinking we have.

Mr. McConnell: I guess, to go back to square one on that, we work to the direction of what we call the ALARA principle, which means as low as reasonably achievable. Although we have an excellent record with regard to the radiation exposures of our employees, that they stay within the regulatory limits, we still pursue a course of trying to make it lower. Heavy water, as it circulates through a reactor and is under neutron radiation, generates the tritium. Our employees are working with that heavy water, so they are subject to some radiation exposures, through intake, generally through the nose, through breathing, but to a lesser extent by diffusion through the skin. Our motivation to remove the tritium from the heavy water was 100 per cent motivated by way of worker protection.

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Mrs. Grier: It was the status of the plant I was curious about.

Mr. McConnell: Yes. That was really why we wanted to build the plant, having looked at alternative ways of doing this. The plant, as you probably are aware and for the benefit of the other members of the committee, is located at Darlington. Mr. Penn, do you know the exact status of the startup at the present time?

Mr. Penn: The plant has been fully commissioned. As far as I understand, and I have been on holiday for the last three weeks, I do not think the plant has started production. I think there are still issues surrounding transfer of flasks of tritiated heavy water from, for example, Pickering to the Darlington station; I think there are some issues associated with that.

Mrs. Grier: What part has the anticipated revenue from any sale of tritium—which, of course, defeats the purposes—played in any calculations you have done?

Mr. Penn: We have never had any anticipated revenue from the sale. There is potentially very high revenue, which we have identified, particularly sales to the fusion program of the future. Many countries are interested in that Canadian tritium for the many other things we use tritium for in our everyday life: luminescent watches, exit signs, Coast Guard buoys, landing strip lights. You name anything that needs to be reliable and unattended, but needs to be a warning light or something like that; that is where it is used.

Mr. McGuigan: I would just like to point out, Mr. Chairman, that we have not raised any questions about time allocation because we know the official opposition—this is a matter of real concern for them. I just wanted to register the fact that we have not complained about time allocation and put you on notice that we might in future.

Mr. Chairman: Thank you, Mr. McGuigan.

Mrs. Grier: As long as it applies on both sides, that is fine.

Mrs. Marland: And he is such a nice guy.

Mr. McGuigan: Let's go on and not waste any time. The big fear that society has seems to me to be caused by events that happened outside of Canada: first, the atomic bombs that were dropped during the war; the runaway plant in Britain in the early days of reactors, even the little runaway up on the Chalk River, a small plant; Three Mile Island in the United States;

Chernobyl in the Soviet Union. Have you prepared an analysis you could give us at another time, because we do not have time to do it here now, of why we have not had any major ones while the others have?

I know you might be breaking faith with your colleagues in engineering, but in the interest of enlightening us and Ontario and the Canadian people on the relative merits not only of the engineering of the system, but the controls surrounding it, there is the fact that ours is done by a public body whereas in the United States it is done on a bidding system and so on. I wonder if you could give us an analysis of that at some point in the future.

I have based some of these questions on an article I read in the May issue of OMNI pointing out that the Americans are coming up with a power shortage in the not too distant future and are going to have to turn to oil, which they no longer control from their own borders; they rely on oil outside of the United States. It is very expensive and it is not very good for the environment, etc. Also, it bears on the fact that we may not be able to rely on our neighbour to help us in those peak periods. The fact that previously we have had a pretty good arrangement and their peaks have been different from ours may not be there, and in fact the demand may be the other way around, for us to help them.

Mr. McConnell: I think, in terms of your first question, that we are very vulnerable to being self-serving or smug or something like that—

Mr. McGuigan: Let's be that.

Mr. McConnell: —in terms of claims having to do with the public safety associated with the Candu program in Canada versus other types of nuclear plants in other countries. I do not think there is any single simple short statement that anyone can make that would provide you with the answer to that question. The 1986 select committee, after the Chernobyl event, recommended that there be a review of Ontario Hydro's nuclear program, and that was undertaken and conducted. Of course, one of the problems there is trying to find competent people who are not seen to have a vested interest and not seen to be in bed with Ontario Hydro or Atomic Energy of Canada Ltd. and so on, people who would do an independent review. I guess that probably should mean more to the select committee than claims we would make.

At the same time, there are fundamental principles that we enunciated and developed early in our program. If one wants to investigate and find out what the veracity of these claims is, I

think quite clearly Canada led the parade in the establishment of fundamental safety principles for nuclear reactors and adherence to them. That came about very simply because, although the world thinks the United States built the first high-powered reactors, that is not true; it was Canada. We were the first in the field, we led the parade, we learned our lessons early and we established the principles early.

When we went into the nuclear program, we did so, I think, with much greater thoroughness, and much more steadily and much more carefully. We built a 20-megawatt unit, then a 200 and then a 500. On the other hand, when we looked across to our neighbours in the United States, to our horror, we found out that there were organizations like the Tennessee Valley Authority that decided to have 17,000 megawatts of nuclear power before it had the first unit running, and we could not comprehend that kind of boldness. I think we just had a slow, steady, thorough, methodical, careful program that laid down the principles and then we followed them religiously.

Mr. McGuigan: I would just like to suggest that in the public press we should make more of that and do a little bragging about what we have done; in fact, do quite a bit of bragging about what we have done.

Mrs. Grier: You have not hidden your light totally under a bushel.

Mrs. Marland: Oh, lovely pun.

Mr. Chairman: Thank you, Mr. McGuigan. Perhaps we can then move on to the next subjects; we have one presentation on clean coal.

Mrs. Marland: Oh, I think you had my name down.

Mr. Chairman: No, I did not. Should I have?

Mrs. Marland: I thought you did. We did not negotiate it off the list.

Mr. Chairman: Mrs. Marland.

Mrs. Marland: Thank you, Mr. Chairman. I have to congratulate Hydro. I think you have the longest list of any organization I know for the use of acronyms. The latest one was ALARA or something. Rad waste is not an acronym, but certainly I have learned a lot of other language.

Just very quickly, I know it is hard to give short answers and I do not want to be accused of taking up the committee's time, but when we are looking at the disposal of radioactive waste, I know that on a worldwide basis you are sharing information all the time. Knowing what the situation is in Europe as you do, is there a brief set of percentage of figures you could give us to

tell us what percentage of electrical supply in the European countries is nuclear generated versus fossil fuels? Do they, per capita, per geographic mile and so forth, have a bigger problem than we do? Are they coping with it any differently than we are? Is it easier to cope with those challenges in Europe? Are there fewer environmentalists? Is the picture very different? I guess the bottom part of that whole question is, are we unreasonable, are our expectations higher than anywhere else in the world, from a practical sense of the subject of that kind of generation?

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Mr. McConnell: In response to one of your questions, we can undertake to give you a table that shows the percentage of electricity generated by nuclear compared with the total for a number of countries, and we will undertake to give you such a table in part answer to your question.

With regard to your latter series of questions, in essence, what you are saying is, what are the social circumstances and what kind of acceptance is there for nuclear power in each of these countries? I do not think there is any simple way to paraphrase exactly what the situation is in Europe because the situation is different.

For example, there is great turmoil in Sweden at the moment because there is a requirement for them to phase out their nuclear plants, and yet they have a fairly high percentage of nuclear. Recently, their neighbours, through Mrs. Brundtland and others, are pressing on the CO₂ issue. It is obvious that if they back out of the nuclear, they are going to be aggravating their situation because they will have to turn back to fossil. There is turmoil and different situations in each country. France is very high in nuclear. It is very gung-ho.

Mrs. Marland: Is there a higher percentage of nuclear generation than fossil fuel current today in most European countries?

Mr. McConnell: My recollection is that Canada is something like seventh or eighth in terms of per cent; I think we are somewhere around 11 or 12—

Mr. Penn: France has the highest per cent nuclear program in the world for the simple reason that France has no indigenous oil, gas or coal; it is totally dependent on others. That is the basis on which French society at large supports the nuclear program, plus the fact that it has been highly successful.

Mrs. Marland: Rather than taking up time now, and if it is not too much work for you, I would be very interested to see that table of

comparison. I think it is very important that we all share the responsibility, all of us, whether we are legislators, or people with knowledge in the organizations or the man on the street. I keep saying we share the responsibility jointly for where we go for our future source of this element without which we cannot live.

If I am not on the committee when we receive the report, I would appreciate a copy. I would like to know whether we are being unreasonable. When you look at Europe and think of the size of those countries and the density of their populations, if anybody is going to be at risk from CO₂ or at risk from nuclear waste, their problems have to be so much more compounded than ours because of the size of our country, indeed our own province..

Mr. Chairman: Are there any further questions? Seeing none, we can move on to the final two topics, clean coal technology and purchases. Perhaps we could have the presentations on both of those, then pause for discussion afterwards.

Mr. Penn: My last presentation relating to the strategy elements for consideration of future new supply is presentation 11.5I, entitled "Clean Coal Technology." I would like to come back again to the thread I have been trying to establish, that here is another technology, coal-fired generation, which has a role that is somewhat different from the others I have mentioned because it has a peaking role and an intermediate supply role.

The strategy element that we are proposing for your review, along with all the others, is, "Ontario Hydro will maintain and improve its knowledge base of new developing coal-burning technologies that promise reduced emissions and/or increased flexibility in commitment."

I have tried to answer the question, "Why do we need clean coal technology?" We need it for four basic reasons. Conventional coal-fired stations, those that we have operating today that use pulverized coal—by the way, pulverized coal has the texture of face powder—are the public's least preferred option because of environmental impacts: sulphur dioxide, nitrogen oxide and carbon dioxide emissions.

You have heard that we can, with scrubbers and other methods to reduce acid emissions into the atmosphere, reduce this concern. However, if you consider the Ontario regulation on acid emissions, which as you know has a cap over the province, it is not a function of increasing capacity; it is a flat, "Thou shalt not exceed so many tons of emission of SO₂ into the atmosphere on an annual basis."

If we were to build this type of coal-fired station in the future with scrubbers, we might find it difficult to meet these regulations. Indeed, there are emerging regulations that the ministries are reviewing that are looking for the use of state-of-the-art technology.

Another reason we need clean coal technology is that it is desirable to have a shorter lead time option than some of the other supply options to provide flexibility. If you need a nuclear plant by the year 2002, it is no use trying to start working on it in 1996. The lead time is just too great. Clean coal technology, and for that matter coal-fired generation, have shorter lead times. There are other ideas of flexibility, which I will present to you, in some emerging technologies.

It is also desirable to have an option with capital costs that are lower than nuclear for the role of filling peaking. Nuclear can load-follow, as I said last Thursday, but it is best suited and is lowest in cost generation for base load.

Just to mention a few examples of where we are at in clean coal technology, I am going to move in the next slide to briefly describe what we are talking about. There is an integrated gasification and combined-cycle plant that is in operation in California. It is a plant of 120 megawatts and was constructed in just over two years, so you can get a feel for the lead time. In Japan today, there is the Futtsu generating station, which is a 1,000-megawatt combined-cycle plant. It does not have coal justification on its front end; it uses liquefied natural gas, but the combined-cycle technology is embodied into that plant and it was built in three years.

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What are the major clean coal technologies, advanced coal technologies? There are two principal ones and there are variants of both. One is called IGCC, integrated gasification and combined cycle, which stands for integrated gasification of coal to create coal gas in the first stage, and then that is subsequently burned in a combustion turbine unit in the second stage, which in turn drives the generator. There are combined-cycle principles to increase efficiency by using waste heat through the process system.

Then there is another concept which is totally different called fluidized bed combustion and there are three variants of this. This is a process where limestone or lime products are injected into the bed of the furnace and the sulphur is retained in the slag that remains after the combustion of the coal.

In the case of IGCC, of course, the sulphur dioxide and the nitrogen oxides are removed in

the chemical process involving the gasification of the coal and they can then be isolated, so they are removed in that process and the coal gas that then goes into the combustion turbine has been freed of that sulphur. It is a trap sort of situation.

What about Hydro's program in these two concepts? Hydro has studied the IGCC status in the world and we have published state-of-the-art assessments addressing the system application to our provincial grid. Concept studies of the system, including plans for possibly building a prototype demonstration plant to gain firsthand experience in operation have been suggested to be done in the future years 1989 and 1990.

We are participating in national and international conferences and in meetings with other utilities around the world that are also interested in that concept. We are, of course, a member of the International Utility Coal Gasification Association and the Canadian Coal Gasification Technical Committee.

Our assessment of the promise of IGCC is as follows. At the present moment, as I mentioned, there is a small demonstration plant in California which is truly an IGCC plant; that is, it has both a gasification stage and a combustion turbine. There is experience elsewhere in the world, particularly in Japan and Germany, where there are hybrid versions where the front end of the system is replaced by a different fuel, such as liquefied gas.

One of the advantages of IGCC is its flexibility to be built quickly. The second stage can be built first, and things like natural gas instead of coal can be substituted as an interim move and then subsequently converted to coal. This means you can bring this type of plant on line very quickly.

It is expensive. It is currently more expensive than conventional coal-fired stations with scrubbers, but there is considerable high promise for the future. It does remove SO_2 and nitrogen oxides efficiently. It removes up to 95 per cent of the sulphur, but it does not have the ability, nor does any system, to reduce emissions of carbon dioxide. One thing you can say, though, about the integrated gasification and combined cycle is it has the highest thermal efficiency of any fossil system, and therefore the number of megagrams of CO_2 per megawatt of electricity being generated is going to be smaller than in lower-efficiency systems. IGCC is largely built in modules in the factories or on the site itself, and this has a distinct benefit in shorter construction periods.

Again, you may want to look at the photograph in the notes. This is a photograph of the

Californian plant, 120 megawatts. It went into operation in 1984. It took approximately two years to build. You can see it is a complex plant. It is situated in the desert region in California. If you look at the photograph in your book, you will see a train carrying coal being automatically unloaded, and the coal being carried through conveyor systems to hoppers. In the central structure is the gasification of the coal, which then subsequently goes into combustion turbine combined cycle in this part of the plant here. This is the size of a plant of 120 megawatts.

Mr. South: What kind of area would that cover in acres or hectares?

Mr. Penn: I would be guessing, but I would think it is of the order of 200 acres, that sort of area.

Mr. South: How would your big plant down on Lake Erie compare? What size area is there?

Mr. Penn: Nanticoke?

Mr. South: Yes, 700 or 1,000 acres?

Mr. Penn: Yes, at least. I think about 800 acres at Nanticoke, as far I can remember. We are acquiring more land, of course, at Nanticoke because of ash storage needs.

Mr. McConnell: Nanticoke, I am told, has 800 acres.

Mr. Penn: I would like to move now to our views on fluidized bed combustion. This is another advanced technology which has, again, another role. It is as efficient as IGCC in removing sulphur. It is less efficient in removing carbon dioxide, since its cycle efficiency is slightly lower than IGCC's. It is in an earlier stage of development. There are several plants around the world in the 100- to 300-megawatt size, but the particular interest in this system is that it has the capability of retrofitting older plant. With an IGCC, there would be no conventional equipment in an existing fossil station that would be useful in an IGCC, but a fluidized bed combustor would merely replace the burner-boilers in a conventional plant and there would be a possibility of using the conventional turbine generators and other pump-jet systems.

We are planning to perform a future concepts study. We have done preliminary evaluations of the possible technical implications of retrofitting atmospheric fluidized bed at Hearn and J. C. Keith. However, it is too early at this point to reach conclusions on its economic viability. We are a member of probably the world's leading group, the Swedish Babcock pressurized fluidized bed combustion utility advisory group, and

indeed Sweden has probably the most advanced fluidized bed plant in the world.

My last slide shows that it is too early to be definitive on costs and operating issues with the fluidized bed combustion. There are three varieties. It is comparable to integrated gasification and combined cycle, but can fill a different role. Information from the operational characteristics of demonstration plants is important to ongoing assessments of design and environmental protection. Like IGCC, fluidized bed technology results in very low SO₂ and NO_x emissions, which will help sustain environmental quality of our atmosphere, but unfortunately it is not the final answer to carbon dioxide emissions.

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Mr. Chairman: Thank you, Mr. Penn. Mr. Marriage, if you could come forward and speak to us on purchases, please.

Mr. McConnell: Mr. Chairman, while Mr. Marriage is going up to speak, I would like to register with the clerk some additional transcript undertakings. All told, we will have responded to questions 1 through 12. We have not as yet received the transcript for questions 13 and 14, but we will undertake to respond to those as soon as we get the transcript and we will file those with your clerk so they can be distributed.

Mr. Chairman: Thank you, Mr. McConnell.

Mr. Marriage: I think you will be glad to know that coming up here, I have moved our blue arrow to 6, the end of our six-pack here in terms of the strategy elements. These will be dealing with the 51st and 52nd strategy elements. This will be followed by some concluding remarks by Lorne McConnell.

The purchases I am dealing with are purchases from neighbouring utilities outside of Ontario, not the nonutility generation purchases from within. My presentation will cover two elements; one dealing with short-term interruptible purchases for emergency support and economic benefits and the second, long-term purchases as alternative options to building new supply facilities. I would like again just to read through the strategy elements with you.

The first one, 6.1: "Ontario Hydro will continue to depend on neighbouring systems for emergency support to a level that is consistent with mutual benefit."

6.2: "Long-term firm purchases of hydraulic power from neighbouring provinces will be considered as an acceptable alternative to building new supply facilities."

Very quickly, I will just remind you that the Ontario Hydro system is connected with Manitoba and Michigan on the west and New York on the east through a number of transmission lines. We cannot operate all the time with Quebec, but we can purchase from them by isolating generation from their system onto ours. Through the various interconnections, the Ontario Hydro system is interconnected in a large network stretching from the Atlantic Ocean west to the Mississippi and all the way south to Florida.

The benefits of being part of this large interconnected network are, first, the emergency support we receive from other systems when we lose either generation or transmission in our system. This improves reliability and it also allows us to reduce generation reserve requirements. The second benefit is in terms of economic short-term purchases when it is available from other systems. This reduces our operating costs and also helps to reduce the domestic rates. Third is the benefit of making long-term firm purchases from capacity built in other systems as an alternative supply option and also to enhance the diversity of supply to the Ontario system.

Before moving on to that, I would just like to make the point that, of course, through the interconnections, we can export when we do have available generation. The exporting, when there is a market and when we have it available, does again help us reduce our costs and our rates, but this presentation will deal with the purchases.

The first element is the emergency support. As part of a large interconnected network, any time there is a contingency in our system and we are short of power, it will flow in from the rest of the network. Then we have to either bring up our generation or purchase it from another system or reduce the load to bring demand and supply back in balance. That is the whole basis of interconnected system operation. This does provide us an increased level of reliability through this.

Of course, we can make the purchases to sustain the power flow in, if it is available from the other systems and, of course, if it is economic compared to our other options. Also, the interconnections and the support allows us to reduce our reserve, the same way it does to the other systems. Through our calculations, we have allowed a 700-megawatt reduction in the reserve requirement, which is about 15 per cent of our total reserve requirement through being interconnected to these systems.

Likewise, we provide assistance to other systems in a similar manner. Really these are the

benefits and the rationale for our first strategy statement on emergency support and mutual benefit.

As I indicated, the interconnections also allow us to make short-term economy purchases. We have always pursued that and we will continue to pursue that, with our staff always being in contact with their counterparts in the other systems. Again, it is based on if they have available generation in their systems and it is at lower cost compared to what our options are. If that is the case, then we do it and it is beneficial to our costs and to our customers.

The periods are normally fairly short, days and months maybe, but it could go up to a few years. The important thing is that these are purchases from generation that happens to be available from time to time on the other systems. They may call upon it the same way we call upon our reserve. Therefore, it is interruptible on short notice. It cannot be called upon to defer capacity on our system.

It is really based on just economics and opportunities. It allows us to reduce our costs. It can also reduce the coal burns and also the acid gas emissions if we are making the purchases from hydraulic generation in Manitoba or Quebec. This provides mutual benefits to ourselves and vice versa with the other systems, and again, this supports the first strategy element in terms of emergency support and mutual benefit.

In looking at the long-term firm purchases, we are looking at purchases with durations that may be more than 10 years. These are considered to be firm capacity and firm energy and are considered to be alternatives to building new plant in Ontario. Again, they can provide some measure of diversity in terms of their geographic locations, different designs. We are looking at, really, base load hydraulic from these other systems. High-capacity factor—that can augment the Ontario hydraulic system which has a very limited amount of base load hydraulic.

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Of course, in a firm purchase, we are looking at something as firm as if we were building a plant ourselves, and so that will require the construction of new plants in these other systems. It will require the construction of new transmission in the other systems and in Ontario. The extent of the transmission, of course, will depend on the amount purchased and the location—where it comes from and where it is delivered into our system.

When we are looking at constructing major facilities in other systems, we are looking at long

lead times, very similar to constructing a plant in our own system.

I would like to recap a few of the things we covered a week ago in presentation 8-D, in terms of these purchase negotiations and factors that go into this. The long lead times, of course, mean an early commitment before the other system will do the necessary engineering—seek approvals, make property purchases, then the construction.

In making a major commitment like this, there is a large financial investment, and it is very similar to the investment we would be looking at in terms of building a plant here in Ontario.

Also, I would like to indicate there are still a number of uncertainties in terms of the purchase because we are looking out in time, 10 years or longer, and there is the uncertainty about the demand, the costs, and getting of approval in both provinces.

Just to give you a feel for the kind of investment we are talking about, if we look at 3,500 megawatts for 40 years, similar to a Darlington-type station, at a high-capacity factor, and if we look at the cash flows over the 40 years, in today's dollars, without any inflation, in building a nuclear plant or providing 3,500 megawatts from coal-fired plants, we are looking at expenditures of \$20 billion to \$30 billion in costs, today, for building and operating that plant, without any inflation. So it is a very large investment that we are dealing with.

You can also relate that investment in terms of jobs. Whether we build here in Ontario, or whether jobs are transferred to another province if we build there, it is a very substantial investment.

In terms of coming up with the purchase price, the pricing and the terms are going to be subject to the supplier's cost for his generation and transmission, the supplier's alternatives in terms of his other markets, and the purchaser's alternatives in terms of what we can build or do.

The purchaser's alternative, and also his looking at future costs and future uncertainties, is going to likely result in offers and actual costs being much higher than this value. As I say, this is just the value in 1988 dollars with no escalation.

The negotiations, because of this investment and the long lead time, will take a long time and will involve senior management—and they have, in the cases of current negotiations with Manitoba and Quebec.

I would just like to touch on a few of the advantages and disadvantages in terms of the purchases. Here are the advantages. Of course, I

am looking at purchases from Manitoba and Quebec of hydraulic generation. It is a renewable Canadian resource. It has no acid-gas emissions or CO₂ emissions. It does provide energy diversity to the Ontario Hydro system. It has less environmental impact as opposed to building plants in Ontario. We still have the environmental impact of the transmission, but we would not have the environmental impact of a station, if that were the alternative.

The disadvantage, as I touched on earlier, is that the economic activity will occur in the other provinces, rather than Ontario. There is less flexibility in the construction of the facilities being done by another group in another province. There may be limited operating flexibility, depending on what can be negotiated as part of the contract. Again depending on the length of the contract, if it is 20 years or 30 years, of course we have to replace that purchase with something else, as opposed to our own hydraulic plant which would last 80 to 100 years, or a fossil thermal plant, nuclear plant, which would last at least 40 years.

We have to assess the purchase against a number of the evaluation factors which we covered last Thursday in presentation 7. We are looking at the advantages, the disadvantages, the investment, whether we are building something here or purchasing it, to support our strategy that a purchase should be considered as an acceptable supply alternative.

In summary, strategy statement 6.1, in terms of the mutual interconnections support, provides access to other generation, it increases our reliability, and it provides a lower reserve level on our system. Strategy 6.2, which says to consider it as an option, provides reducing operating costs and electricity rates, would reduce coal burns, would reduce acid gas emissions and defer new plants, but of course all of this is subject to lengthy negotiations.

Mr. Chairman: Thank you. I note that it is six o'clock. I think we need to finish this afternoon, so I would ask members to perhaps keep their questions brief.

Mrs. Marland: Back to the clean coal technology, figure 11.5-12, even with scrubbers it could be difficult to meet acid gas regulations if a new conventional coal-fired plant is built. I heard your explanation, Mr. Penn, and I am still not very clear about what it is that is being said there.

Mr. Penn: This was one of the conclusions of the representative plan analysis that, if you plan on building new coal-fired plant, and you also

want to operate existing coal-fired plant, and you do not plan on building new nuclear plant at all, and only limited amounts of hydraulic because there are only limited amounts of hydraulic, the net effect is that you will generate a lot more energy from coal.

With the acid gas emission regulation being a total amount of acid gas emissions, the more energy you generate from coal, the less emissions you can have from each unit of energy that you generate. So the more you generate from coal, the better your cleanup of the coal has to be to still meet the emission regulation. Particularly if you get to higher load growth scenarios, then within the 20-year period you get to the point where there is some doubt whether even the best cleanup technologies will actually allow you to meet the regulation, even if you retrofit all existing plant and have the latest controls on the new plant.

It is just a question that if you generate 10 times as much energy from coal, then you have to have cleanup that is 10 times as good to still meet the same total emission regulation.

1800

Mrs. Marland: Does anyone have the approximate cost of the plant in California that the committee is going to go and visit?

Mr. Chairman: The committee is not visiting any plant in California.

Mrs. Marland: No, it is a serious question.

Mr. Chairman: You are free to visit it if you would like, Mrs. Marland.

Mrs. Marland: Do you have any idea of the cost? We heard about the acreage. Is that the only plant of its type in North America? Is that why it is featured in this presentation?

Mr. Penn: It is the only IGCC demonstration plant in North America, yes.

Mrs. Marland: Do you have any idea of their capital costs?

Mr. Penn: I am afraid I am going to have to give you an answer by interrogatory, because I do not have that right now.

Mrs. Marland: That is fine. It would be interesting to know—

Mr. McConnell: My understanding is that as a demonstration plant, it is very much higher than a commercial plant would cost, but I understand that a commercial plant would in fact cost more than our standard coal-fired plant.

Mrs. Marland: Oh, it would.

Mr. Penn: In broad terms, that is the answer, but I could not tell you the dollars per kilowatt.

Mr. McConnell: Possibly I could get you the numbers.

Mrs. Marland: Thank you. I keep saying I should be on this committee, as the environment critic, and I wish I were. I find it tremendously interesting. I think it would be interesting to see that plant, or the one in Sweden.

Mrs. Grier: We wish you were on the committee too.

Mrs. Marland: On figure 11.6-1, we are talking about the strategy element and that long-term firm purchases of hydraulic power from neighbouring provinces will be considered as an acceptable alternative to building new supply facilities. What I am wondering is, when we export our electricity, obviously, we do it at a profit?

Mr. McConnell: That is correct.

Mrs. Marland: When we import it, are we importing it at their profit? Does it cost us as much to import it as the margin we make as a markup when we export it?

Mr. Marriage: We will import on a short-term basis only if it is cheaper than our alternatives of generating it ourselves, so it has to be less than our costs. On a long-term purchase, again, we would be entering into it only if it ended up to be a lower-cost alternative than our own. I do not think you can compare the profits of the exports versus the savings of the purchased.

Mr. McConnell: I think it would be the intent on the part of the seller to us to maximize their profit.

Mrs. Marland: At that point the vendor does not have a choice, just as we do not have a choice. I just wondered whether we are held to ransom when we have to buy it or do we hold them to ransom when we are in the happy position of selling it? I guess it is a rhetorical question.

On the interconnected system operation, I wondered why on 11.6-2, in your list of interconnections, you have Manitoba, Michigan and New York but you do not have Quebec. I did not understand that.

Mr. Marriage: You may have missed an earlier discussion on that. Because of the nature of the Hydro Quebec system, it cannot be operated as a direct interconnection with our system.

Mr. McConnell: You have two choices. One is to isolate it, and that is on that slide, and the

other is to have what we call back-to-back direct current.

Mrs. Marland: I understand now.

Just in the summary, where you are talking about what the concept of interconnections provides and you say lower reserve, and probably this is something else that has been addressed before, but is a lower reserve desirable because of the cost of holding reserves?

Mr. McConnell: Yes, it is desirable. We would save money, and we do typically at the present time lower our reserve requirements by 700 megawatts by depending upon the interconnections. Our customers save money.

Mrs. Marland: It is expensive for us to reserve electricity.

Mr. McConnell: Yes, 700 megawatts of additional capacity is expensive.

Mrs. Marland: Oh, it is the capacity for banking it really. It is like having a large enough box and a bigger box costs more, in layman's terms.

Mr. McConnell: Yes.

Mrs. Sullivan: I want to ask questions about the clean coal technology. First of all, let us look at the maximum level of load requirement in the future and peak demand needs, say in 2006. Without new fossil fuel burning, can we meet those peak requirements with existing plant or with new plants without this technology and still meet the acid gas emission requirements?

Mr. McConnell: If we had the upper forecast happen, we would need clean coal technology in order to meet it. We could not meet it with a large purchasing or a large nuclear program.

Mrs. Sullivan: This becomes then, in terms of alternatives for supply, a pretty important technology in terms of Hydro's own priorities?

Mr. McConnell: That is correct. That is why we have the strategic statement that says that Ontario Hydro will maintain and improve its knowledge base of new, developing coal-burning technologies that promise reduced emissions and/or increased flexibility.

For example, if you are going to install more coal-fired plant, you find yourself retrofitting all your old coal-fired plant because you still have the same amount of acid gas limits that you have to meet. Of course if those should be made more severe, that would put even more pressure on this clean coal technology.

We are not saying it would necessarily be a requirement for this technology if we had a more modest growth rate.

Mrs. Sullivan: Is the Japanese plant a demonstration project or is that a commercial operation?

Mr. Penn: It is a commercial operation. It is seven modules, approximately 167 megawatts each, to form approximately 1,000 megawatts. It is called the Futsu generating station. It is built on reclaimed land off Tokyo harbour.

Mr. Snelson: I think I should just clarify here that if that is burning natural gas, as Bill suggests, then that really is not very new technology. Combined cycle with natural gas is an established technology you can buy off the shelf.

The really innovative things of the integrated gasification combined cycle is putting together known gasification processes with known combined cycle processes and linking them together in a rather sophisticated way that makes use of the waste heat from one process and the other process to generate electricity. It is the gasification and the integration which is really the new technology.

Mr. Penn: That is quite right. While the Japanese can buy liquefied natural gas from Canada at a low price, they will continue with their plant as it is. When the costs go up, they have the opportunity to convert to coal gasification at the front-end stage.

Mrs. Sullivan: A comparable situation here would not be considered, starting with liquefied natural gas and then moving into coal?

Mr. Snelson: We would very much consider that. That is one of the flexible aspects of this technology, that you can put in the gas-fired combined cycle, that is the combustion turbine and the steam part of the cycle in a relatively short period of time fueled by natural gas, and subsequently add the coal gasification at the front end.

That allows you to get megawatts with possibly a higher fuel cost in a short period of time and to convert to a lower fuel cost option over a longer period of time. So you are not saddled with the high fuel costs for the full life of the plant.

Mrs. Sullivan: One of the things that I also noticed was that the Japanese plant is operating at 48.5 per cent efficiency. Do you know what kind of efficiency that the full IGCC plant in California is achieving?

Mr. Penn: It is not anywhere near 48.9 per cent. Part of that 48.5 per cent is due to the use of natural gas. It is of the order of 39 per cent, and IGCC combines that. You have to put that in

context, of course. That should be compared with 34 per cent for conventional coal-fired stations and 33 per cent for thermal-cycle efficiency and nuclear power.

1810

Mr. South: Could you repeat that? Did you say nuclear is only 33 per cent?

Mr. Penn: The steam cycle.

Mr. McConnell: The steam cycle in a nuclear plant is low pressure and low temperature. The fuel costs are extremely low in a nuclear plant, because of the uranium, but the thermal efficiency is not high.

Mrs. Sullivan: Regarding the proposal for the prototype plant in Ontario, when you mention 1989, is that your timing proposal for environmental assessment and other approvals in planning and design and so on?

Mr. Penn: It is just a pure proposal from my own division. It is with regard to conceptual studies of what the plant would be like and how much it would cost. It has yet to be approved. It is in our business plan. It now has to stand the test of the budgeting process.

Mrs. Sullivan: Plus the approvals process latterly?

Mr. Penn: Subsequently, yes, if the corporation recognizes that should be built.

Mrs. Sullivan: Assuming approval from the Hydro board and the steps you have to go to reach that approval, what time line would you be looking at for that testing period, in terms of getting that prototype under construction and then in operation?

Mr. Penn: I would expect that if we started our studies in 1989, the engineering assessments would take at least two years. If there were exemption under the Environmental Assessment Act, which would surprise me, we could build the plant in two and a half years. That would take you to about 1994. But since there would undoubtedly be a need to discuss the matter under the Environmental Assessment Act, I think you could add another three years.

Mrs. Sullivan: You are really close to the year 2000 before you would have even the prototype?

Mr. Penn: The mid-1990s, on nuclear.

Mrs. Sullivan: What would the size of that prototype plant be? I guess you would not know that at this point.

Mr. Penn: If I had to guess, conceptually, of the order of 200 megawatts.

Mrs. Sullivan: The next question is related to the second kind of technology. I think you said it

could be used in terms of the rehabilitation of existing plants that are now mothballed. You mentioned Hearn, but on the other hand you also said it was useful for small-unit capacity, 100 or 200 megawatts. Is not Hearn way up there in the 1,200-megawatt range? Why was Hearn used as an example?

Mr. Snelson: Hearn has four 100-megawatt units and four 200-megawatt units, which gives 1,200 megawatts in total.

Mrs. Sullivan: My next question relates to the purchase of supply. I wonder if Hydro has ever conceptualized looking at some of the kinds of things that, for example, AECL is doing in Yugoslavia—or maybe it is Romania—with lease-back operations, whereby AECL is building the plant and Romania is leasing it back. Is that possible to do in Manitoba, for example?

Mr. McConnell: You are talking about our building the plant in Manitoba or Quebec?

Mrs. Sullivan: Yes, with Manitoba owning it and then leasing it back to us. It is done country to country on major projects. I wondered why it could not be done province to province.

Mr. Snelson: I thought the purpose of the AECL arrangement was to minimize the risk to the purchaser of the power plant. I know they have considered this for Turkey where AECL would build the plant and the contract would then have them operate it. The purchasing company would buy the power for a while and would take the risk on the plant. I think this is somewhat different from one utility dealing with another province.

Mrs. Sullivan: It could be, but on the other hand, we might have some increased benefit in terms of control over the construction of the plant and in terms of time and so on: timewise, plus employment.

Mr. McConnell: Nothing is impossible.

Mrs. Grier: There has been some discussion of a joint venture.

Mr. McConnell: The chances of Quebec agreeing to our doing the constructing in that province would be minimal.

Mr. Marriage: If I could just add to that, we have explored some of these arrangements with both Manitoba and Quebec in terms of some kind of joint participation. We could even be part of the construction and review and everything else, but so far they are fairly reluctant to give up that ownership of their resources.

Mrs. Grier: In your description of the possibility of retrofitting, you referred to R. L.

Hearn and J. C. Keith, not to Lakeview. Do you see in your rehabilitation of Lakeview some of this technology being used?

Mr. Penn: The answer, shortly, is no, because the Lakeview rehabilitation has to be done in a more timely fashion than it is possible to develop this new clean coal technology.

The purpose of our studies on Hearn and J. C. Keith, on fluidized bed combustors, was really to apply our understanding of the knowledge in a study situation, given the size of the units that Mr. Snelson just mentioned—of course the size of units at Lakeview is larger—to gain an understanding of the practicalities of the problem.

Mr. McConnell: Just to divide your question into two parts, considering the needs we face in the 1990s, if you recall the comments I made this morning, we very urgently need to get Lakeview fixed up in the early 1990s, in order to meet Ontario's power requirements during the next decade.

If you were thinking about the question that you asked us and said, "Could Lakeview ultimately undergo such a major retrofit?" and thought about, say, after the turn of the century, there is no reason why that kind of thing could not ultimately be considered. But it is not the kind of thing that would be appropriate to consider if one were going to go ahead with the prototype in the 1990s. We need Lakeview as it is.

Mrs. Grier: So Lakeview will be rebuilt in its existing form?

Mr. McConnell: Yes.

Mrs. Grier: But hopefully without the coal dust that now coats my house, my garden and my constituents on a regular basis?

Mr. McConnell: I guess we should say we refuse to answer that question for fear we may incriminate ourselves.

Mrs. Grier: It seems to me that whenever we have raised or our federal government has raised the whole question of acid gas—and I am thinking back to the envoys' report on acid emissions—the answer from the United States was that they needed more research into clean coal technology. So presumably, there is at least a substantial allocation of funds in that country towards clean coal technology.

Does that mean that there is in fact some urgency or some speeding up of the experimentation in the United States? Is it going to be as necessary to get into prototypes and a long evaluation of the technology here as it would be with some process that was not being evaluated and accelerated south of the border? We are not

reinventing the clean coal technology, surely? Can we not take advantage of what is allegedly accelerated investigation of it in the United States?

1820

Mr. McConnell: I think we would totally exploit everything that we can learn from the United States or any other country. I guess there are two basic reasons for doing a prototype in Ontario. First, we have learned that the conditions you run into in the southern United States do not necessarily represent all the conditions you run into in a climate like Canada's. We certainly learned that the hard way, in such plants as Lambton and so on, with freezing problems in the wintertime. Second, somebody else knowing how to do something does not mean to say we know how to do it. There is a problem of learning how by doing it yourself. Those are the two elements.

I would not want to mislead the committee into thinking that there is no determination at this point in time on the part of Ontario Hydro to commit a prototype. That is in very early stages of debate, and I think it would be misleading for us to say that there is a strong conviction and a path that we are going down. There is a great deal of uncertainty as to whether that would be something that Ontario Hydro would recommend, because of its affordability in terms of power rates and so on.

Mrs. Grier: One question arises from the purchases. Is the 15 per cent contribution to reducing the reserve that you anticipate because of your ability to interconnect with other jurisdictions a fluctuating level? You do not for ever count on 15 per cent of the reserve and reduce the reserve by 15 per cent. Over what kind of a time frame does that 15 per cent hold true?

Mr. Marriage: You are correct in that this is not constant for ever. This is based on some studies we did a few years back. We are hoping to review the situation, because of different mixes in terms of capacities and things and demand management and everything else that is happening in all of the systems. That number could change.

Mr. McGuigan: I wonder if you have done analysis of how transborder contracts and prices might be affected in—I know it is problematic—the possibility of a free trade agreement being enacted.

Mr. McConnell: Are you thinking in terms of the exchange of electricity?

Mr. McGuigan: Yes, and the prices.

Mr. McConnell: In effect, Ontario Hydro has really worked on a free trade basis up to now. There is always the risk that when the two countries formally introduce free trade, we will have less free trade than we had when we had no free trade, if you can follow that.

Mrs. Grier: Very well.

Mrs. Marland: It is time for me to leave.

Mr. South: It sounds like politics. Perception is everything.

Mr. McConnell: Essentially, we have been working on the basis of our selling to them when we had something to sell and it was a lower cost. We have been buying from them when they have something to sell that is a lower cost than our generation. That is the way we have carried on in the past.

Mr. McGuigan: It is a kind of delicate area to get into, but the sociologists tell you that people who live together without benefit of church usually break up after they become married.

Mr. McConnell: Well, you can use that analogy if you wish, but we hope we will be able to carry on with the free exchange of electricity.

Mr. McGuigan: What I am referring to more specifically is that my understanding of the energy clause is that under free trade we cannot charge them more than we charge our own people. How does that get into Quebec charging low rates at home and higher rates in New York and our always selling at a profit? Have we made any analysis of that?

Mr. Marriage: No, we have not. As Mr. McConnell has said, we basically have been operating in a free trade situation. We have always established that what we are selling is surplus to the Canadian needs, through the National Energy Board. We have always made sure that the price charged is higher than the price for the equivalent service in Canada.

Mr. McGuigan: I think it would be useful to take a hard look at the proposals and see how you come out on that.

Mr. McConnell: I have to be careful how I put this. The policy that has come from the governments over the years in directing Ontario Hydro with regard to the question of export has been consistent: "Don't commit anything to meet your neighbours' needs for the purpose of making profit. At the same time, by all means, exploit interchange opportunity of buying and selling, assuming that you commit capacity to meet your own needs." The policy in Quebec and

Manitoba is different. They are quite prepared to construct facilities for the purposes of selling and making a profit; we are not.

Mr. McGuigan: I was not questioning the past policies. I think they are very good. My question really was whether or not your past policies would be allowable under the free trade agreement.

Mr. McConnell: Yes, I think they would be.

Mr. Snelson: With respect to Quebec selling at a lower price within Quebec than it would sell at to either New York or Ontario, I think you will find the same discrepancies exist within the US and Canada already. For instance, I am sure the Bonneville Power Administration, in the Pacific northwest, will be selling power at a lower rate to its own customers in Washington and Oregon than to California or to other places. I think that is common practice.

Mr. McGuigan: The free trade agreement does not stop the Americans from having price differentials, but I understand it stops us from having price differentials.

Mr. McConnell: The spirit of the words "free trade" would mean no limits.

Mr. McGuigan: I do not want to get into an argument about free trade, but from our perspective it is not free trade.

Mr. McConnell: Yes, right. Free trade is a matter of degree.

Mr. McGuigan: OK. Just as a matter of curiosity, when those people are making the sales agreements, they must be doing it on pretty much of a split-second decision. Does a committee do it, does an individual person do it or does a computer do it?

Mr. McConnell: There are two kinds of contractual arrangements, those that are taking place from hour to hour—

Mr. McGuigan: That is what I mean.

Mr. McConnell: That takes place between the control centre of Ontario Hydro and the control centre of the neighbouring utilities. They are constantly negotiating, every hour.

Mr. McGuigan: Would it be one person to one person?

Mr. McConnell: One person to one person, yes. Then, of course, the long-term purchases are a different thing. That gets into protracted negotiations which end up with agreements that a certain amount of capacity in energy will be delivered at a certain place at a certain time.

Mr. McGuigan: It comes down to human judgements on a very short time basis, on the hour-to-hour stuff.

1830

Mr. McConnell: The hour-to-hour stuff is pretty straightforward. The majority of that is done on split savings. Supposing I can generate some power for three cents a kilowatt-hour and you are running some plant that is costing you four cents a kilowatt-hour, then you would shut your plant down, I would sell to you and I would sell at 3.5 cents. That is the sort of thing. You would save half a cent, I would save a half a cent and everybody wins. These kinds of transactions are pretty straightforward things.

Mr. Marriage: Mr. McGuigan, I think if you are able to go to the control centre tomorrow on the tour, you would be able to explore that with them too and see how that really happens.

Mr. Charlton: Just very briefly, I would like to go back to the question Mrs. Grier raised of short-term economy purchases and their interruptible nature and this whole idea of being able to reduce your reserve as a result. There are two things in that. One is, is there some kind of pecking order when the need for interruption comes along?

Mr. McConnell: Yes.

Mr. Charlton: There is. How does that work? Who gets interrupted first I guess is what I am asking.

Mr. Marriage: If they are interruptible contracts, usually what happens is the last person in is the first one who gets cut out.

Mr. Charlton: It is going to be a matter of timing rather than a set pecking order?

Mr. Marriage: Yes.

Mr. Charlton: OK. I think that answers that part of it.

Mr. McConnell: There are staged pecking orders. Supposing we have to make a choice between cutting a firm contract where somebody is paying, for the sake of argument, five cents for his electricity and somebody is on an interruptible rate and is getting a cheap rate because it is interruptible and is getting it for three cents, we will cut all those interruptibles first, because that is the nature of the deal.

Mr. Charlton: Yes, I understand that. What I was getting at was if you have interruptibles with New York state and with Michigan, who would you cut first? I think the answer was you would cut the last one in first.

Mr. McConnell: Right.

Mr. Charlton: And the same would happen the other way. If you were buying from Michigan

and Ohio was buying from Michigan, the last one in would get interrupted first?

Mr. McConnell: Right.

Mr. Snelson: But if we needed it for capacity purposes, we would try to buy firm, in which case we would have that capacity and we would be paying the higher price, but we would not be cut along with other interruptible customers until that point in the pecking order was reached.

Mr. Charlton: OK. The last, very quick part of the question then is, what do you foresee in the future in terms of the advantages you have expressed? You have expressed to us, over the course of the last two sets of hearings, how the Ontario situation is certainly tightening over the next two decades. What are the prospects for your being squeezed out of something that has provided some useful advantage, to the tune of 700 megawatts?

Mr. McConnell: I think that if you take the whole year, it is a 100 per cent certainty that those advantages of interconnections will continue. There are a lot of hours in the year and a lot of diversity. There is north-south diversity and there are random differences in which there are failures and so on. However, the net benefits may very well be reduced if the utilities in North America all find themselves in a situation in which they are tight or inadequate. There can very well be a diminishing dependence on each other if we all get into trouble together. If we have a situation where we are on a down cycle, the chances are that we will be down along with our neighbours at the same time; and if we have an up cycle, we tend to all get into that boat together. You have to be careful that the boats people tend to get in tend to be similar in terms of economic cycles.

Mr. Marriage: I think you should realize in coming up with that number of 700, we did take a fairly conservative number because of the number of these concerns. When you look at the total network, 700 megawatts is not a large amount when you look at all of the interconnected systems around us. If it was a much larger number, we would be very concerned.

Mr. Charlton: It is very large number, if you find yourself without it.

Mr. Marriage: Yes.

Mr. Chairman: Thank you, Mr. Charlton. Mr. McConnell, do you have some brief concluding comments?

Mr. McConnell: Yes. Originally, I was scheduled to talk for 30 minutes. I do not wish to

overstay our welcome and I am proposing to talk, if I may, for four minutes.

Mr. Chairman: That would be fine.

Mr. South: That's the good news.

Mr. McConnell: Our introductory briefings to this committee are now complete. As is evident to you, on our chart there that we had you follow as we made the presentation, we focused on the 52 strategy elements that were associated with that six-pack up there and we attempted to communicate to you the essence of the rationale for each of those 52 strategy elements. I was very sincerely impressed with the patience and the attention we received from this select committee. We really appreciate that.

In talking with my colleagues, I think that without question all of us, without your filing a report next December at all, have already found the dialogue we have had very helpful. We indicated when we started that we would be deliberately defensive in defending the strategy that we have developed. But I also commented that this did not mean we were not willing to change, because we are willing to change. I do not think it is appropriate that I single out this afternoon specific things that you have said that motivate us to change, because I think we need the collective view of your group. I do not think that would be appropriate for me to do that.

At the same time, I would have to say that independent of that, just on the merits of the discussion, you have motivated us to make some adjustments and we will certainly be looking forward to the end of this process when you send us your report in December. In the interim period, you have a number of interveners that are coming to talk to you. I hope these briefings will put you into a good position so that, when they take a position, you will be able to ask good questions and bring out further viewpoints. I am sure that will happen.

Mrs. Grier: We will defend you to the death.

Mr. Charlton: But we are not going to say whose.

Mr. McConnell: At any rate, while you are having interveners and other witnesses appearing, we will be listening carefully to them. We will also, I think I can sincerely say, be listening

to where they concur in the strategy we have got. We will be listening carefully to where they express disagreement with the strategy or, alternatively, where they are suggesting ways in which we may improve the strategy. As I said at the outset, we would then be motivated to take those comments into account as well.

I would like to repeat that we are available whenever you want us to make special presentations to you, whether it is on acid gas, radioactive waste, nuclear costs, greenhouse effects or what have you. We are available to respond to any questions you might have with regard to the 20 recommendations of the technical advisory panel. We are available to respond to any of the 97 remarks that were made by the 10 ministries, if you so desire. We are available to respond to any questions that come up as a result of your dialogue with the interveners. We will look forward at the end of this process to have an opportunity to be questioned by yourselves and maybe to have a chance to make some closing remarks on our part.

Thank you very much on behalf of myself and my colleagues in Ontario Hydro for your patience and understanding. That completes our presentation.

Mr. Chairman: Thank you, Mr. McConnell. I am sure we will be taking you up on that offer to provide us with further information as we go through this process.

I would like to thank Ontario Hydro for their presentation to us. You have obviously done a tremendous amount of work. I have been impressed with some of the audiovisual aids. I did not know you could make coloured photocopies as well as some of the ones I have seen here. That has been something that was interesting to me.

I would like to thank committee staff and Hansard for putting up with our long hearings and staying so late and to remind the members, as this is the end of this round of hearings, to please take all their belongings from the room. We will no longer be locking it.

I will adjourn the committee until 10 o'clock, Monday, September 12, in this room.

The committee adjourned at 6:43 p.m.

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From Ontario Hydro:

McConnell, Lorne G. W., Vice-President, Corporate Planning

Marriage, Art, Director, System Planning

Penn, Bill, Program Manager, Planning and Engineering Management Group

Snelson, J. Ken, Manager, Demand/Supply Integration



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Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy
Electricity Demand and Supply



First Session, 34th Parliament
Monday, September 12, 1988

Speaker: Honourable Hugh A. Edighoffer
Clerk of the House: Claude L. DesRosiers

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Contents of the proceedings reported in this issue of Hansard appears at the back, together with a list of the members of the committee and other members and witnesses taking part.

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Monday, September 12, 1988

The committee met at 10:13 a.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY (continued)

Mr. Chairman: I call this meeting to order. Perhaps I can ask everyone to take their seats. Today's hearings are going to be devoted to hearing from and speaking with the technical advisory panel that was put together by the Minister of Energy and reported just this last July. The panel is here. I wonder, Mr. Brooks, if you might introduce yourself and the members of the panel to us for purposes of Hansard.

Mr. Brooks: Yes, I would be happy to do that. On my left is panel member Janice Hamrin. Next is George Govier. James Litchfield is on my immediate right and then Carl Beigie is on the far right.

Mr. Chairman: I understand you have some comments you would like to make. I believe these have been handed out to the members of the committee. Perhaps we could move to that and then we can start going through the report. I will turn the floor over to you.

ELECTRICITY PLANNING TECHNICAL ADVISORY PANEL TO THE MINISTER OF ENERGY

Mr. Brooks: As you say, I do have a very brief opening comment to make, a sort of summary of the summary of our report. We thought it might be helpful if we said a few words at the outset.

First, I would like to say that we are indeed honoured to be before the committee today. We will, of course, be pleased to respond to questions on our report, which for the record is the report of July 1988, in which we provide the results of our review of Ontario Hydro's draft planning strategy.

The panel's approach was that where deficiencies in Hydro's strategy appeared to us to be noteworthy, we endeavoured to be helpful by providing constructive criticism and recommendations, not simply negative comment. There are some 20 recommendations. I will not go through them now. They are summarized at the beginning of the panel's report.

I thought that perhaps at this point just a mention of a few matters might serve to launch the questioning and proceedings today.

In these prepared remarks, copies of which I understand have been distributed to everyone, I note that it takes time and much effort for large, generation- and transmission-oriented electric utilities to shift their focus from traditional supply options for meeting requirements to demand management and independent generation possibilities that have become prominent comparatively recently. We do not say that as a criticism of anyone or anybody, but rather it is simply a fact of life.

On a few more specific issues, we do say in our report that we think there is probably more potential in what are broadly referred to as demand options than are suggested by Hydro's strategy document. We also believe that independent generation, both small hydro and thermal plants, could prove to be more attractive than projected in the material we had before us.

I might say, as a marginal comment, that the panel did not have Hydro's June 1988 response to the minister on conservation and efficiency measures. That became public perhaps about the same time as our report did, so that was not part of the material we had before us.

Turning to a few other matters, we mention what we perceive as some shortcomings in Hydro's load forecasting. I acknowledge that is an area where Hydro for many years was considered a leader among utilities. We are not suggesting they do not have a lot of expertise in that area—they still have—but we see room for improvement in the circumstances of today, which we believe have changed markedly in recent times.

Uncertainty as to future circumstances and requirements is a major problem for utility planners, and it always has been, but in our view it is particularly difficult today. We do not offer any magic solution, but we do suggest a forecasting approach that we see as somewhat of an improvement over what Hydro has now.

Uncertainty is related to risk and we emphasize the need to reduce, to the extent possible, the risk associated not only with being off the mark in forecasting load, but also with the risk of choosing the wrong, or at least the inappropriate mix of supply and demand options. By supply and demand options, I mean options to meet the demand both of the conventional supply type and

of the demand type, such as load management and conservation.

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I make brief reference to two other recommendations. The panel, in looking at its mandate, saw two things tied into power system planning. We recommended a one-time review of nuclear generation costs as used by, and projected by Ontario Hydro. We were struck by how low those costs are compared with most of the other options for supplying future demand. Given how much reliance is being placed today on nuclear energy, and how much may be in the future, we felt it was particularly important that the cost comparisons and estimates be as accurate as humanly possible.

We also suggest a significant change from the current regime, what one might call the regulatory regime, under which, today, there is no continuing technical review of Ontario Hydro plans and planning. We make the distinction between the type of review our technical advisory panel did, which is really a one-shot affair, and a continuing review that would go on from year to year. That sort of review does not exist today in the area of technical matters; that is, power system planning. What we recommend is either a new agency or an expanded and different role for an existing agency.

Those are all the opening remarks on our report. As I understand it, perhaps the most helpful thing would be for panel members, taking account of their particular areas of expertise, to respond to questions from committee members. We could go through the report, taking questions chapter by chapter. I think, Mr. Chairman, you mentioned that to me before the session started. We would be happy to do it in whatever way seems most helpful to you and the panel or committee members. In most cases, the panel members will recognize areas and may even be so keen that they will speak up with their responses before any colleague gets a chance to start on it. If there seems to be any reticence, I will be happy to put the finger on someone I think would be delighted to answer.

I think that is everything I have to say. I have not asked my panel members if any of them wish to say anything by way of introduction or to deny anything I have just said, but I am sure they will not be shy if that is the case.

Mr. Chairman: Perhaps we could offer the other members of the panel, if they would like it, the chance to make an introductory comment, but it is not necessary. If not, then I believe the best way would be to have us go through the report

chapter by chapter and perhaps pause for questions after each subject matter has been dealt with.

I think it might be useful if we deal with chapters 1 and 2 together. I think they have more to do with Hydro's approach and basic corporate strategy. Perhaps we could hear how you arrived at your recommendations regarding those areas and then have questions from the committee. If you could deal with chapters 1 and 2 now, that would be the best way to go.

Mr. Brooks: Chapter 1, as you will have seen, is a very short chapter. It sort of sets the stage for a number of things which follow. I would not propose to say anything particular about it unless you think that would be helpful. Otherwise, we could go straight to questions.

Mr. Chairman: Why do we not just speak about your views on the corporate goal Ontario Hydro has stated for itself?

Mr. Brooks: I take it we can go ahead with the corporate goal and strategic principles. There appears in that chapter one of our 20 recommendations. That recommendation, which is on page 7, is that the corporate goal ought to be restated, the panel felt, "to include specific reference to minimizing the total long-term cost of the electric services desired by the people of Ontario, consistent with safety, flexibility, reliability, and acceptable environmental impact."

That is as short as we could make the recommendation. There are reasons for the recommendation and they are in the chapter. We could expand on the recommendation and put it in more words, if that would be helpful.

Mr. Chairman: I think it might. If you might just explain the different shading your recommendation is putting on the question of long-term costs from what Hydro has put, that would be helpful to the committee, I think.

Mr. Govier: The panel chairman has put the finger on me. I am George Govier.

Let me just say we anticipate that implicit in Ontario Hydro's planning is concern for "safety, flexibility, reliability, and acceptable environmental impact," but these words are actually missing in its statement and we felt it was appropriate that those words be added. We have noted some criticism with respect to environmental impact and we think it is particularly important that those words appear in the goal statement.

With respect to the distinction between the "greatest value to the customer for that service over the long term," which is Ontario Hydro's

wording, and our wording, which is "to minimizing the total long-term cost," our concern was with the reference to greatest value and how that might be measured. It seemed to us it was more direct and offered a better chance for measurement if the reference were "to minimizing the total long-term cost."

I might say that we include in total long-term cost not only the cost of supplying the electricity itself, but also of actually receiving the ultimate service. There is a distinction, in that the ultimate service includes the electrical devices that are operated with electricity, and our belief is that the consumer is or should be concerned with minimizing his total cost, including the cost of the devices and indirectly, therefore, their efficiency.

Perhaps that is enough, but I will try to add if anyone wishes me to.

Mr. Chairman: All right. Are there any questions of the members of the panel on this point?

Mrs. Grier: Take me a step further along that, if you would. Are you implying by this that right down until the consumer turns the switch has to be included in Hydro's assessment of the cost of something? You are integrating all the various levels of supply down the chain?

Mr. Govier: Yes. We consider that, for example, to provide long-term minimum cost for air-conditioning, the efficiency of the air-conditioning device and the ultimate cost to the consumer of running that device over the long term is what is important, rather than just the cents per kilowatt-hour. Of course, the cents per kilowatt-hour is a large component of the total, but it is not in itself the total.

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Mrs. Grier: Thank you. I have some other general questions on this chapter but not on the cost.

Mr. Chairman: All right. Perhaps I will come back after the other members have asked questions.

Mrs. Sullivan: It seems to me that to a certain extent Hydro has its corporate goal here but it also has a statement of principle that basically has covered what you include in your corporate goal, so I am not sure really whether this is a major point in terms of the things we want to talk about today. But in terms of the cost and the inclusion of equipment or whatever is going ultimately to be used by the end user, about one third, I suppose, of Hydro's customers are industrial customers.

I am not certain I am convinced that Hydro itself ought to be paying attention to the cost of the equipment it is using, the corporate choices that are being made in an industry as to whether it is going into electronic equipment or whether it is going into a different kind of equipment. Indeed, with the new electrotechnologies, many companies will not have a choice; that choice will be made based on their corporate decision-making. I am just a little unsure as to why you feel those costs should be considered as part of Hydro's strategy rather than as the corporate strategy.

Ms. Hamrin: If I might make an attempt to clarify a bit, I think our concern is what the bill is to the consumer. If you put all your emphasis on just the unit cost, the cost per kilowatt-hour, and not on efficiency, then you could reduce the cost per kilowatt-hour and still have your customers paying more. What the customer worries about is if his bill is \$100 and that is too much, not what the cents per kilowatt-hour is.

We think a corporate goal of Hydro appropriately should address the total billed to the customer for his electric use and not just the unit cost in cents per kilowatt-hour. I would put the emphasis on the efficiency of the equipment. It is important to make sure there is efficient equipment out there and that is part of what that goal of Ontario Hydro should be, whether it is in education or support of efficiency standards or other kinds of things that make certain people can get efficient equipment to do what it is they need to do, as well as lower unit costs. They could lower unit costs and have total bills go up higher if the efficient equipment is not available.

Mrs. Sullivan: But in defining it that way, are you not defining a new role for Ontario Hydro?

Ms. Hamrin: We are certainly placing a great emphasis on energy efficiency, which Ontario Hydro did itself in the report. We are simply saying that as this is going to be one of the areas they are looking at, it should be reflected in the corporate goal, that it is the overall bill the consumer is concerned about, not the unit cost.

Mr. Litchfield: If I could add something small to this, I agree completely with what was just said: This is really fundamental to how you view conservation as a resource in your power planning. If, for example, you take the corporate goal Hydro had before it modified it, and with the clarification that lowest cost was in fact rates—the customer's average unit energy cost—if that is an economic goal of your planning, you will find substantially less conservation opportunities than if your goal is to minimize the total long-term cost of energy services.

The difference is that one is focusing on the rate, the cents per kilowatt-hour; the other is focusing on the demand society has for energy services and trying to identify the cheapest ways to provide those services. Therefore, efficiency improvements are a resource and are a way of achieving the same degree of energy service at the end use with less total generation.

Mr. McGuigan: Just so I can understand this properly myself from the standpoint of a businessman, I think in the past one would go to suppliers of diesel fuel, ask them their cost per gallon and perhaps have them get some figures on what that provided in the way of horsepower. One would go to the coal people and ask them the cost of coal and perhaps what that would cost in horsepower.

Then on electricity, you would ask them their rates and the cost per horsepower and make some decisions based upon that. But you might make some faulty decisions because that would not be including the capital cost of the devices that would be using these sources of power. You would not be considering the maintenance cost over the years for those devices. You would not be considering the environmental effects either to the public or to yourself.

Now you are suggesting that we carry these things to the ultimate use, that we carry them to air-conditioning. We are not just talking about flipping the switch; we are talking about a rotating shaft somewhere along the line and the cost of maintaining a rotating shaft that will give the most efficiency. You are really suggesting that Hydro—and I think lots of us would agree—take on a social role. Perhaps that is an extreme way of putting it.

Most of us here attended a caucus meeting last week in which we heard from people on the environment. I guess for the first time we heard enunciated in a clear way that we now have to link environment with economics. It is not a case of having an environment department and an economics department, but those two should be linked.

I think that is producing, too, perhaps not strictly environment or economics but in your case you are bringing in three things: environment, economics and energy. Is that the message you are trying to get across, that you have to carry this far further down to the end product to the citizens, actually to the citizens' life, to their children and their children's children and to the type of system that we are going to live in?

If that is correct—and I see you nodding your heads—does that not place Hydro at a kind of

disadvantage as compared to those who would be considered its competitors in a business sense? It is going to be at a disadvantage to other suppliers of a turning shaft.

Mr. Litchfield: I think not. At least in my own experience, I have seen that the electric utilities that have recognized the opportunities for efficiency improvements and have used those to educate their consumers have been able to maintain a lot of loads that would have gone elsewhere.

For example, air-conditioning is not a very good example because it is primarily electrically driven, but let's say heating. At least, where I am from in the US northwest, as electric rates have increased, a lot of people have switched fuels. They have gone to wood, natural gas and oil to avoid the higher electric rates.

Many of the utilities, in fact all the electric utilities in the Pacific Northwest, are building a style of home now that has extremely high levels of energy efficiency. Because of the overall efficiency of the building, the total bill that Ms. Hamrin was talking about earlier in that home is substantially less than if they built a less efficient structure and heated it with natural gas or with oil.

The linkage between efficiency and energy service and the resulting bill that the consumer pays is a very powerful tool for a utility to continue to market its product. Where in many cases they would not be competitive with inefficient equipment, they can be very competitive with efficient equipment, and a lot of the new electrotechnologies are responding to that very need.

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You are possibly right to the extent that you really try to integrate everything we have in this objective into some economic measure of performance. A lot of environmental impacts are very difficult to measure and even more difficult to quantify. It would not be uniformly applied to all consumers if that was true and was factored into the price of the product. I think what we are getting at here is that Hydro has a responsibility to take all those factors into account. Some of them are judgemental; some of them are purely economic. A combination of all of them will help them to meet their consumers' electric energy service needs at the lowest total cost and keep them competitive relative to other fuels.

Mr. McGuigan: That is very interesting. I have a specific thing that is really related to a constituency case, but I think it illustrates some of the confusion that is out there and even here in

the committee. It has been a very dry summer and my constituents are faced with irrigation like they have never been faced before, putting in new systems and so on. Of course, the power source is one of the questions they have to answer.

I asked a question here in committee of the Hydro people following a presentation they made that we should be moving to switchgear. They used the example of mills milling wood, where the power requirements change from time to time depending upon the amount of wood they are putting through, the type of wood and so on. By putting in the proper switchgear, which is an electronic system for controlling the input and output of motors, considerable hydro and considerable money would be saved.

That comes down to an irrigation system, where you are pumping water and you are not pumping the same amount of water at various times in small systems, where you turn valves off and on and turn sprinklers off and on. The information we were given here is that if you had a 100-horsepower motor and you were only going to be taking off 80 horsepower for pumping water, you would still be paying for 100 horsepower. But when you come down to the local managers of the utilities, they have a different story. They say if you are taking 80 horsepower from a 100-horsepower motor, you are only paying for 80.

I put this out since we have the Hydro people here in the background. I wish they would clarify that for us, because we have Hydro in the committee, at the high level, telling one story and we have the Hydro people out in the field telling another. I just raise that as an area of confusion where the facts are apparently not known or are misunderstood.

Mr. Brooks: Of course, it is not for us to respond for Ontario Hydro, but we could speculate, if you wish, about what the problem or the difference might be.

Mr. McGuigan: I was kind of directing that partly over your head.

Mr. Chairman: Perhaps we could see you at a more appropriate time. I do not know that speculation on a matter like that would be too helpful to today's deliberations.

Mr. McGuigan: It does illustrate some of the problems we have.

Mrs. Grier: I just wanted to say to the panel that to have been appointed in April and to reply or present a report of this substance in July with minimal staff support is, I am sure, a record

around this place. It will never be noted anywhere, but I wanted to say thank you.

Mr. Dietsch: There are a lot of new records in this government.

Mrs. Grier: Lots of new records. This is not in the government yet.

Can you help me, as a layman and not a planner, with the definition that you used to make the difference between a strategy and a plan, or perhaps give me an example of a principle that you feel should be inculcated in this kind of study that would be a clearer and less all-encompassing principle than the five that you have so properly zeroed in on?

Mr. Brooks: I think you will have noted that we say in the report that one of the areas that gave us much difficulty was this very matter of a distinction between a strategy and a plan. It is not something that is recognized and that everybody knows but us, so to speak. It is a difficult distinction.

We try to address that, I guess, when we deal with the process of power system planning in chapter 3 and present some diagrams. We certainly saw a strategy as containing principles and approaches lying behind the plan. We were not sure, of course—and perhaps we are not even sure today—what Hydro sees as a strategy as distinct from a plan. One of the points we make is that if one is going to go out with this kind of document, it is very important to be as clear as possible, the least vague, as to what a strategy is and what it does contain or should contain.

I think it ties in here to the corporate goal and strategic principles in chapter 2, in that we felt that Hydro needs to know very clearly what its goal is and what its mandate is. We put in chapter 2 what we thought ought to be elements in the corporate goal and what ought to be strategic principles, but we are not aware whether the people of Ontario wish Hydro's goal and mandate to be as they are set forth in our chapter 2 here.

The important thing is that whatever the people of Ontario want their utility to do, what they want that utility's corporate goal to be, they ought to know and Hydro ought to know. If indeed Hydro ought not to go as far as perhaps is suggested by some of our recommendations, then that may be okay; but Hydro needs to know and the people need to understand what it is that Hydro is trying to do and where its mandate stops.

Perhaps it would be even misleading to try to draw a line, black and white with no shades of grey, between a strategy and a plan, but I am

quite happy, if any of our members can shed some light on that.

Ms. Hamrin: I think one of the differences, at least in my mind, is that a strategy gives you the basis for understanding how a plan will be developed, what criteria will be used to select among the options available.

It was difficult, if not impossible, for us to tell, from the documents we got from Hydro, how it would make the decisions that would lead to a plan. We feel it is quite important, from a public policy standpoint, that people understand when a plan comes out and the utility says, "We are going to build X, Y and Z, and we are going to proceed to do these things," how it reaches those decisions, what the basis was for deciding on those particular outcomes rather than some others. As I would view it, the strategy is what would help you get there.

The kind of principles we have listed on page 7 are all lovely, but they do not give you any idea of how we are going to compare between one thing and another, how we are going to balance one principle against another in making those final choices. I think that really our main theme is that we feel it needs to be transparent to the public and to the people who are interested in this issue how the utility reached the decisions it did, and not have something that is so vague that when it reaches a decision you have no basis for saying whether that was the correct one or whether you would have done it somehow differently.

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Mrs. Grier: In other words, in your concept, strategy would describe the process, and that is where your attitude of public involvement comes in. It would state very clearly in the strategy, "Here is how the public will be involved."

Ms. Hamrin: Or at least how the utility will make its decisions itself, I would think, in the strategy, how it is going to balance the advantages and disadvantages of this resource option against this one. There was nothing here that told you that.

Mrs. Grier: Can I just be sure I understand this right? For example, taking principle 2, which is "reliability is paramount," you say on page 8: "The one thing reliability is not is paramount. The issue is the weight it should receive in a tradeoff with, say, increased reserves that raise customer cost."

Ms. Hamrin: Correct.

Mrs. Grier: Where in the process do you see that tradeoff being made, and if it were done in

the way that you envisaged, where would we see that happening?

Ms. Hamrin: Maybe Jim, because he is more the expert on the planning strategy—

Mr. Litchfield: We are skipping ahead to chapter 3, but in chapter 3, we tried to lay out a planning process that we think would be more idealistic or more typical of what we would follow, and in that planning process is where the tradeoffs are made between conflicting objectives or conflicting principles. We can work through that, if you want, when we get to chapter 3, or now.

Mr. Chairman: Perhaps that would be useful. Would it, Mrs. Grier?

Mrs. Grier: Yes, because on chapter 3 I was going to ask about this whole business of screening some things out prematurely and how one avoids that happening. Perhaps when we get into that we could—

Mr. Chairman: We seem to have shaded into chapter 3 already. Perhaps Mr. Litchfield will continue and discuss that chapter and the reasons for the recommendations.

Mr. Litchfield: Sure.

Mr. Beigie: Let me just pause for one minute. I think some of the difficulty you are having, reflecting the difficulty we had, is the basic problem in defining what Ontario Hydro is as a corporate entity. If we were dealing in a traditional kind of business situation that I in a management faculty would deal with we would be talking about a relatively simple goal. In the private sector corporation, it is to maximize the bottom line with some kind of caveats in it. The strategy would be the way in which the company would seek to achieve that goal, and that would be its basic strategy, to eliminate competition, to gain market share—these kinds of things.

One of the difficulties you have is that it is easier to say what Ontario Hydro is not than to say precisely what it is. Quite frankly, I should think Ontario Hydro would be confronting very similar problems. One of the things I think was clear to the panel was that Ontario Hydro has a job to do. It has to continue seeking to achieve performance in relationship to that job.

We are going to come into a process here of somehow saying what the strategy ought to be, when in fact, as an industrial organization economist, I want to go back and ask, what exactly is the kind of market we are dealing with? That is not obvious in the case of what is, in effect—and Ontario Hydro is not the only one in Canada—a chosen instrument of government.

The ability to define precisely what chosen instruments are supposed to do is not something this country has come to a very clear understanding about, I must say.

Mrs. Grier: As a supplementary on that, surely the best way of doing that is not for the chosen instrument to define what it is, but for it to be given by government a mandate and a context within which it operates. Can Hydro do the job itself or does it need to hear from the government: "Here is the social and economic context within which you do your planning. Here is your mandate"?

Mr. Beigie: With respect, and I say this in a generic sense, I have worked in this kind of area for many years and I have heard the same sentiment expressed in many ways. Yet the fact of the matter is the desirability of what you are saying often conflicts in reality with the need of the chosen instrument to carry on supplying an essential service to the general public. We can debate about what government ought to do, but the fact of the matter is that in the case of electricity, telephone systems and transportation in this country, there is a job that develops over time, and while we sit and debate in the houses of parliament around the country, we do not seem to be able to come up with a clear definition that will satisfy the political imperatives that characterize the system we deal with.

Mr. Chairman: Perhaps, Mr. Litchfield, you would continue with chapter 3 because I think we entered into those issues and it might help clarify the questions that are being raised at the present time.

Mr. Litchfield: Okay, I would be happy to.

Chapter 3 is really pretty well summarized in the two figures, figure 1 and figure 2; figure 2 is an expanded figure 1.

Starting with figure 1, the process begins with a statement of goals and objectives. In Ontario Hydro's plan, that was their corporate goal and their statement of principles, the five major principles and many lower-level principles under each of those.

Those are the basic guidance that you establish for your planning. Those are the things you wish to achieve and that you hope you can achieve, but many of them are in conflict with one another and so tradeoffs must be explicitly dealt with in the planning process that follows.

Part of the problem that the panel had was that the Hydro strategy tended to focus at this very early stage in planning, yet provided an awful lot of information about the rest of this process but reached no conclusions on it. I suspect you saw

most of the panel members smile at your original question here, what is a strategy and what is a plan, because we spent many hours wrestling with that very question.

The problem was that what they called the strategy on the cover had elements of almost every step here, yet was focused almost entirely at this very early stage of "this is the goal and here are our principles." Following that, there needs to be a comprehensive assessment of what are your alternatives for achieving your goals—what is it you can pick and choose from; what are their technical, economic and environmental characteristics—and as best you can, develop a comprehensive assessment of what is out there.

At this point, you were only screening from the list at the very highest level things you think are just absolute losers. So, as you said, you want to be careful at that stage to be inclusive, not exclusive. You want to make sure that anything that has a reasonable chance of achieving your objective is included.

The way this information is characterized, technically, is something called a supply function, and we can get into that. It is more or less a representation of how much of any particular resource you can get at various levels of economic expenditure. For a certain amount of money, how much resource can we acquire out of any particular sector or any particular technology?

You then need to be able to compete these, one with another, to make the tradeoffs with, say, in your previous example, reliability. If we are going to achieve a particular reserve margin as our objective, is that reserve margin economically specified? In other words, we have done surveys and we think the cost of outage is balanced with the cost of additional supply and, therefore, we have an economic reliability criterion, or is it judgemental or policy or what is it? To achieve that level of reliability, what resource alternatives should we then pick and choose from and how do they compare in their ability to meet that reserve margin? Some will meet it very economically; others will not be able to meet that objective.

The evaluation of alternatives results in your selection of your preferred power plan or the plan. You exclude some things and include other things. You do that following specific criteria and in order to achieve the original goal and to follow the principles you set for yourself. From the plan you extract the things.

A plan is a long-term instrument and it does not necessarily tell you exactly what is going to be done in the year 2000. It tells you, based on today's information, what you think you will be doing in the year 2000 and from that you can extract the things you need to be doing today. Out of the plan logically flows what we call an action plan. It is the things you have to do today in order to prepare for the future. That entire power system planning process is what we would call the development of a plan, and where our strategy is in this is hard to find. It is probably mostly the goals and statement or the goals and objectives, but obviously in what Hydro called the strategy it went on through this entire list.

It did some of each of these, but it did not select a power plan. It did identify some priorities for implementation. It did identify some actions that they thought they ought to take, but the problem was the whole recipe was not provided. So there was an awful lot of speculation on the part of the panel as to how each of these boxes would be executed by Hydro, what information would be included or excluded and what logical extensions would be made from that that would lead to action now.

The most important part of all of this is the bottom step. Planning has an impact only in what you do today. What you write about what you will do 20 years from now may or may not be what you will do 20 years from now. You will have a lot of information between now and then that will modify your actions, but for the actions you take today, you are going to spend money and make commitments that are probably going to be pretty much irreversible. Once you start down a course, you are either going logically to complete that course or you are going to experience some costs as a result of not completing it. If you want, we can get into more detail in figure 2 as to what each of those steps include.

Mr. Chairman: It would be useful if you could do that.

Mr. Brooks: Before we do that, I would like to reiterate what Jim Litchfield has said. The document we were asked to focus on when the panel was formed was to us a mix of what we perceived as strategy and planning. In order to suggest one way, and there may be others, of bringing some order to this, we put in this section on power system planning. The figures 1 and 2 that Jim has referred to were for that purpose.

One approach could be that a very short strategy document could be produced. I think it has been found in other areas that it is desirable

for an organization like Hydro or many others to decide itself what it understands its mandate to be and, thus, what its corporate goals ought to be, to put that up to the government or those to whom it is responsible and say, "In as clear a way as humanly possible, we have stated what we think our role ought to be, what our corporate goals ought to be, how far we are going to go into what have been termed earlier social areas."

Then it gives the people or their representatives the opportunity to say: "Yes, we understand what you are telling us and we agree," or, "No, we don't want you to go that far and we don't think those ought to be your mandate and goal; instead, it ought to be this." But in order for people to make that kind of decision, they have to see clearly and understand what it is Hydro feels it ought to be doing. The statements ought not to be that this is good and this is bad and this is something in between. I know it is not easy to make those kinds of clear statements, but we really were saying, and are saying here, that we have to be clear on the strategy and goals and, whatever they are, that ought to be decided.

Personally, I would think that a strategy document that sits up at the very top, referring to figure 1, where it says "Goal and objectives," would be a very short thing, but short and sharp and, "This is it." Then once that is straightened out, one can get on with the planning process.

Having said that, we can proceed, as Jim has offered, into that, which is the planning process as distinct from this sort of end-strategy thing.

Mr. Chairman: You can proceed, Mr. Litchfield.

Mr. Litchfield: Figure 2 just expands on the grey figure 1 representation, trying to be hierarchical here so that the reader would stick with us through part of the concepts we were trying to get across.

All power plans that I am aware of have this same basic recipe. There are lots of bells and whistles and you can do things in different orders from what are shown here, but there are some fundamental pieces of information, and Hydro has recognized these in its planning.

The first level in figure 2, after the goals and objectives, is that we obviously have to forecast what future demands are likely to be. We have called that "analyse demand." There is a whole body of expertise and literature tied up there, and the panel has some specific recommendations in that area.

The second box is to analyse your resource alternatives. Both conservation and generating resources need to be evaluated on consistent

economic criteria—this is commonly referred to as a level playing field—so that resource alternatives can compete with each other on the same economic basis.

In the third box, there is something that is frequently taken for granted but is an important step in the process, and that is a careful assessment of your existing system. Only by looking at how each new resource integrates with your existing system can you accurately reflect its costs and benefits when it is ultimately acquired as a part of a plan.

For the outputs of each of these, shown as the circles, obviously, the load forecasts come out of the load forecasting activity. Conservation and generating resource supply functions are the major outputs that come about from an analysis of resource alternatives.

One of the things that we had some difficulty with was getting a good representation of conservation supply functions from the research that Ontario Hydro provided us. Only in our second round of questions were we able to get to an obscure internal staff paper—I do not know how obscure it was, but it took us a while to get to it—that finally had some pretty good research on conservation supply functions available in the Ontario economy. That is a pretty fundamental piece of information and should play prominently in any planning exercise.

The system capabilities is a quantitative representation of the existing power system and gives you the benchmark against which new resource alternatives can be computed.

Another feature here that is very important, and very difficult right now, and there is a lot of argument in the literature about how to deal with it, is the integration of your conservation assessment with your load forecasts. The two have a great deal of interaction. There are many technical problems that can be experienced if you are not very careful in how those two activities occur.

For that reason, load forecasting as an expertise is becoming increasingly focused on how best to analyse conservation alternatives or demand-side management alternatives. There are very important linkages there, and the pair of arrows was meant to represent that. There is some careful work that has to go on there or fairly large mistakes can be made; technical errors can be made.

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A simple example is that it is very easy to count something as a conservation measure that you include in the supply function that you think

you can go out and acquire to try to meet load, but if that same conservation measure is either explicitly or implicitly already included in your load forecast, you have what is called the problem of double counting.

You have already incorporated it in your load forecast and your loads are lower as a result of that efficiency improvement being in your forecast. If you think you have yet to do it and you are planning on running conservation programs to get it, you are not going to be able to do it; it is already going to be occurring and it is in your forecast. That kind of problem, and there are many more that are similar, needs to be dealt with explicitly.

The combination of those four major pieces of information—the load forecasts, conservation supply functions, generation supply functions and a characterization of the existing system—give you the ability to identify alternative ways to meet your future energy requirements. Something that is very important, though, is that the future is fundamentally uncertain. Uncertainty is something that we have all known about, but it is frequently ignored or only given lipservice. Uncertainty is so important that it can change your whole approach to your resource mix. We will talk about this some more as we get into the later chapters of the panel's report.

The two things that are very important, which you look at as you identify alternative plans and you try to evaluate the strengths and weaknesses of each plan, are to explicitly evaluate the risks that are imposed on the ratepayers of Ontario by any particular plan and to look at ways to manage those risks or to reduce the risks that are imposed by the inherent uncertainties in the Ontario economy.

The other thing that is very important is to establish very clear cost-effectiveness criteria. Cost-effectiveness criteria are absolutely fundamental to your schemes that rely on, say, independent power producers or the new popular term, "bidding strategies." These are strategies where you look for nonutility providers to compete with one another and provide a mixture of resources. You have to have some very clear economic criteria by which to judge the goodness or badness of those bidders or of the power producers that you might solicit.

Cost-effectiveness criteria are also fundamental to be able to screen out the resource alternatives that are, in fact, not cost-effective. As I mentioned previously, you begin this process with a very broad, inclusive set of criteria, looking for just about any resource

option that you think might be cost-effective. After you begin to assemble plans, you can then look at how the resources are competing one with another and identify what level of economic cost-effectiveness is achievable in each plan and, therefore, what level of resource cost you would not be interested in.

The cost-effectiveness criteria give you the ability to compete resources one with another in a plan and identify the losers and the winners. The feedback loop is that after you have developed more specific cost-effectiveness criteria, you are likely to exclude some resources that you initially included. You are likely to find them to be not such good deals and you need to iterate through this process until you think you have reached a plan that is the lowest-possible cost. Again, the new popular buzzword is "least-cost planning," and the process is to try to find the cheapest-possible way to meet Ontario's energy service requirements here and exclude all resources that you have found to be not cost-effective or too expensive.

From that process, you select your preferred plan and you propose it as the way to proceed to meet your future energy requirements. The plan would have explicit recognition of uncertainty and would identify the resource actions that are needed in the near term in order to prepare for that future. From the power plan you can identify an action plan, and that action plan is what drives the investments that will be made over the next several years that will either prepare you well for the future or will make very large mistakes.

This is a very important process. It has the potential of causing the investment of billions of dollars and, if those investments are not properly targeted and do not accurately reflect the uncertainties the future holds, there can be a lot of regret associated with some very large investments. I can tell you all about the regret in the Pacific Northwest, where I am from. We have made some very large mistakes as a result of not accurately incorporating some of the uncertainties that were inherent in our planning.

Mr. Chairman: Are there any questions at this point?

Mrs. Griener: Let me just comment on your use of the phraseology "conservation supply functions" and "generation supply functions." It is the first time I have seen it done that way. I presume there was a reason behind it, rather than using, as Hydro has done, the words "supply options" and "demand options." Is there anything more to it than just better terminology?

Mr. Litchfield: Yes, there is more to it. Other than the concept that resources come in incremental sizes, incremental pieces, and that each of those pieces costs differing amounts, the major attribute for demand-side management measures or conservation measures—I use those two terms synonymously—is efficiency improvement.

There are a lot of incremental steps that can be taken. Each one we call a measure. When you array those from the cheapest to the most expensive, what you find in conservation which is unique to that resource, in my knowledge, is that there are some things that are extremely cheap, some other things that are moderately expensive and some things that are very expensive. When you look at the incremental steps you can take, you can identify an awful lot of resource you might miss by averaging everything out.

If you look at your resource as being a house, you get a different picture than if you look at what you can do with the walls to make them more efficient or what you can do with the windows to make them more efficient or what you can do with air-conditioners and the different steps you can take in making air-conditioners more efficient.

That level of detail and desegregation gives you much better information about the specific kinds of technical improvements to efficiency which can be made and it gives you a lot of information about how you might design your programs, the acquisition actions you take, the ways you go about securing those measures which you would not see if you were only addressing 100 megawatts of conservation in the residential sector, for example.

Mrs. Griener: Okay. But in the series of steps you have outlined in figure 2, when you are looking at conservation supply functions and load forecasts and the integration of those two, how do you avoid making assumptions and taking into account cost-effectiveness criteria at that stage as opposed to the later stage on your chart, and avoid screening out at that stage options which may in fact have some merit?

Mr. Litchfield: Initially, we pick a very high cost-effectiveness criterion to start with, one we know is extremely high, much higher than we know will be cost-effective. We begin in our planning with taking all measures or resources up to 15 cents per kilowatt-hour, in terms of cost. After we completed this planning process and established cost-effectiveness criteria, the actual cost-effectiveness limit came out to be around five cents per kilowatt-hour. We had to iterate

and exclude from our plans a lot of measures we initially included.

What I said a moment ago is that you begin by being very inclusive because of the fear that you might arbitrarily miss some opportunities which could be very important. Then, after you have gone down this process a way, you can begin to define criteria that make sense based on the collective of all resources you have found. For example, 15 cents per kilowatt-hour might be the cost-effectiveness criterion if after a lot of study we found there really were not many resource alternatives and all of them were very expensive.

In our planning, marginal resources tend to be thermal plants, usually coal plants. We know their costs are somewhere between 4 to 4.5 to 5 cents a kilowatt-hour, depending on the basis. That is generally where the cost-effectiveness criterion finally settled. But we were not sure of that going in and we were not sure that we would not be acquiring substantially more expensive resources. We included a lot of resources in our first cut that were later screened out.

Mrs. Grier: Thank you.

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Mr. Brooks: I wonder if I could interject that I think the usefulness of some form of diagram and specific description of power system planning has been to some extent shown by the dialogue or discussion we have had here. In other words, it is difficult to carry on a discussion and for this committee to deal with a complex subject like this or even more so for the public to be able to grasp what it is all about.

We are not suggesting that what is presented here is all new to Ontario Hydro. We are presenting what we see as a rather fundamental display of the power system planning process with which Hydro would likely not disagree too much. But they might say that while our process differs here and there and for various reasons, whatever the process is, it is much easier for a committee like this or the public to grapple with if you have it laid out so that people can follow it. I think it is a very important point for what lies ahead in this province.

Mrs. Grier: Could you expand a little bit on the final recommendation in that chapter about the integration of research and development activities?

Ms. Hamrin: We had received some data on the research and development activities Ontario was pursuing and how much money was budgeted in those various areas. I do not have that in front of me to give you specifics at this

moment, although I am sure that it is available from the ministry staff and that they have it in the records.

Our feeling when we got that was that it did not seem to be directly tied to what we thought they would be pursuing necessarily in the planning process and action plan. For instance, if they are going into conservation or demand management as a main effort and a new effort for Ontario Hydro, it would very probably be appropriate that some portion, and maybe some significant portion, of research and development moneys would be put into that area since it is new to them and they may need some additional data.

I think our comment there is that that research and development activity should flow from the planning process and the other things they are doing, and not appear to be unrelated and off in other areas, although of course you are always looking for new options in the future as well. It was not clear that that was all integration of the total planning process.

Mrs. Grier: But if I make the assumption—and I am sure the Hydro people will tell me if I am wrong—that their answer would be, “When we decide how much emphasis we are going to put on demand management, then we will know how much research we are going to do,” does that not exemplify the whole chicken-and-egg kind of dilemma that we are in? Are you suggesting that in anticipation of a plan or an option or a decision, more resources right now ought to be put into that, regardless of where they see it coming out in the process?

Ms. Hamrin: It was just, I think, that it looked to us, as we got their research and development budget and the items, that there was no relationship particularly between that and the other things going on. I would not want them to commit way in advance necessarily, but my understanding is that, for example, demand management conservation has been a major topic of discussion and emphasis for several years now, as well as suggestions that they move in that direction, so it would not have been unrealistic.

I do not want to pick on just one area. It was simply a recommendation that they be integrated into the whole process so that you could look and understand why the budget was being expended the way it was and that it would have some input later into the needs of the utility.

Mr. Chairman: I wonder, Mr. Brooks, before we leave this chapter, if the panel could expand a bit on recommendation 3. It would be of interest to me. On pages 16 and 17, one is grappling with the problem of our sitting here

making a plan for the future and, of course, life goes on at Hydro while we are making the plan, so how do you sort of make the two meet? I wonder if you might expand a little bit on what Hydro, say, would do now in anticipation or how it might make decisions now that it has to make in anticipation of a plan that is going to come out in two or three years perhaps.

Mr. Brooks: We have tried to recognize that no one can sit back and wait until everything is in place, all the i's are dotted and the t's crossed and you have a plan before anything is done. There has to be, as we indicate, a weighing, as plans develop, of things that appear to have promise for the future. We think that if there is a process of the sort we describe here—of the sort, not necessarily precisely what we propose—you will be alert as the plan develops to things that show promise. Of course, you will be alert to priorities or desires that come to you from others.

For example, I guess there is an example in Ontario where it is becoming fairly clear, as I understand it, that conservation is something the government wishes to see pursued and pursued energetically. Hydro, as I understand it, is endeavouring to do that. We are not saying Hydro ought to say, "Thank you very much, government, for your indication of the government's priorities, but we are not going to do anything about it because we haven't finished our plan yet." Not so. It takes a careful balancing, a careful eye always on the need for a plan and the continuing development of a plan and the changing of it, with doing things so that you can get ready to take action when it needs to be taken. That is why we refer to the plan being designed for flexibility and potential reversibility.

With respect to the last part of recommendation 3, "undertaken only with clear public consensus of their acceptability in advance of the completed plan," I guess we have in mind there things that are just so obvious as being the right things to do or the right way to go that you can proceed partway down the road, always keeping an eye on the fact that circumstances could change and you might have to pull back a bit. The likelihood of getting what we term clear public consensus on any item, I would personally hazard a guess, is not too high; but there may be things that are of that sort and one has to be sensitive and alert to the possibility that they will come along.

If there are any specific questions on that section, "Action in advance of a plan," 16 and 17, I am sure we could deal with them.

Mr. Chairman: Mr. McGuigan, did you have a short question?

Mr. McGuigan: I preface that by remembering what Churchill said after the Second World War, that he was not likely to dismantle the British empire. I guess one of the questions that struck me and possibly other members of the committee was, did Hydro start with its conclusions and then develop a strategy that would lead up to its already established conclusions?

I do not say that in any nasty way because, as an organization, it would be sort of unrealistic for it to set out a planning strategy and have that strategy lead it to say, "Well, we should be using gas and coal instead of electricity," any more than if we asked the fossil fuel industries to come up with a plan that said they should be using electricity.

Does it come down to the point that in this new regime we are looking at, in the totality of economics and environment, we need some super body directing the overall way that we should be going on our energy needs? Do you see yourself as that or do you see the need for that sort of an approach?

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Mr. Govier: I will try that. Later in the report, we do make reference to the role we see for an independent technical agency to review the strategy, the developing long-term plans and the action plans of Ontario Hydro. We did not look at the subject so broadly as to contemplate an agency that would look at all energy resources and the planning with respect to the relative roles of coal, imported oil, gas and electricity. We focused on the electricity side.

Mr. Litchfield: I have one thing to add to that. I think where you started with your question is one of the concerns that I had when we drafted recommendation 3; that is, the credibility of this whole process, the process we just went through, is very delicate with the public, at least in my experience. The kind of thing the public looks for is the kind of thing you expressed, where it looked as if actions were being taken, agendas were already set and the planning was just being done to substantiate where everybody wanted to go.

That is so damaging in terms of your overall credibility that it is very difficult to assemble a plan that actually builds a consensus and moves the regulatory processes, the public and the political processes along with you to get a job done. Our concern here was more one of process. You need to preserve the credibility of your planning by having your actions logically flow

from completed plans—not the reverse, that plans flow from your actions.

Ms. Hamrin: In continuation of that—and that is the important point for emphasis—it was stated by Ontario Hydro that it was interested in going through this process to reduce conflict and disagreement later. I think we all agree that is a good ambition. Unfortunately, what frequently happens in the utility area, and some others as well, is that when people do not understand how you got where you are or what the logic is of going in the direction you seem to be proceeding, if they have not felt they have had a place where they have had input or an ability to argue their point, then the only thing to do is try to stop the action plan when it is finally going to be put into place. Then all the effort is on the railroad track trying to stop the train, rather than back earlier where the item should really have been debated.

What we have been trying to do, and I think it is the main point of this whole report, is to have a process that is sufficiently clear that whoever the advocates are for whatever position, they both understand and are able to participate in working through to get to plan, so that you are not always doing an action where the only activity comes at the very end when you are trying to put something in place simply out of frustration and not understanding how it ever got there.

We feel it is critically important that you have this process in place earlier and people have a chance to participate. Whether they agree or disagree with the final decision, they at least understand how you got there, or how the utility got there, and that they had a chance to make a point in it.

Mr. McGuigan: That applies to a lot of situations the government is dealing with.

Mr. Chairman: Mr. Beigie, do you have a comment?

Mr. Beigie: I just say quickly, because I think we are moving towards a later part of the overall report in this discussion, that in my experience over the years in Canadian public policy I have come to question the credibility of those people who take on themselves the responsibility of assessing credibility in others. In essence, I think, what this recommendation—

Mrs. Grier: That includes a lot of politicians.

Mr. Beigie: Always. I think there is a need for some kind of systematic approach. We hear endlessly these days that it is the media's fault. Well, it is the general public's fault for taking on— They want an authority but they do not want to take on the responsibility of becoming better

informed about what they are talking about. With many of the things we come to conclude do not have credibility, something like Ontario Hydro or just a whole host of our institutions in today's society, the fact of the matter is that the public really does not have all that much basis for reaching that conclusion except that they have come to a conclusion the public does not particularly like. The credibility of deficit reduction is not very high, but the fact of the matter is that reasoned people would come to the conclusion that eventually budget deficit reduction is an absolute essential.

It seems to me that what is really being talked about here is the development of some uncommitted expertise—that is my phrase and I personally like it—which looks at an issue without having the conclusion already reached. Whether Ontario Hydro had the conclusion in the first place raises questions in my colleagues' minds, but my own view is that if I have the responsibility, looking into the future, of meeting what the political process is going to demand of the suppliers of electricity in Ontario, I would have formed some fairly firm conclusions and be trying to get people on my side right now.

Mr. Chairman: Perhaps we could move on to chapter 4 on load forecasting. Mr. Brooks, perhaps the panel could expand on recommendations 5 and 6 and some of the reasons you made those recommendations.

Mr. Brooks: As I said in the few opening comments, we recognize that Ontario Hydro has put a lot into its forecasting activity over the years and we understand that, but there are some differences between what we perceive to be Hydro's approach and what we think might be used.

For example, there is quite a bit of debate these days about ending up with a forecast which, in effect, represents what sometimes is called a single-line forecast. The other school is that you should not really end up with a single-line forecast but rather a band which shows the reasonable range in which future requirements are likely to fall. There are different shades where people come down on the two approaches. There are those who use single-line forecasts and then two lines on either side showing the possible deviation from the single-line forecast. The debate goes on.

We think there is an improvement in forecasting to take care of the uncertainties, and this is the main thrust of recommendations in here. There is an element in recommendation 5 pertaining to incorporating appropriate econometric techni-

ques, and I think Carl Beigie would probably like to expand on that a bit.

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Mr. Beigie: Actually, not much. This is one of the more difficult recommendations that we had to come to grips with. My own conclusion is that if you accept forecasting, and modern life has to have forecasting, Ontario Hydro has developed a substantial amount of expertise in the forecasting field. I would like to say right at the outset that, having spent my entire professional life as an economist, I have become less and less enamoured with the amount of emphasis that people put on forecasts.

To give a very simple example, in terms of power system planning, there is in Ontario today an absolutely critical question that econometric techniques are not going to solve, and that is the question, will—not “should”—this country go into a free trade agreement with the United States or not? Depending on the answer to that question, the forecast power needs for this province will be significantly affected.

We could spend hundreds of millions of dollars on trying to find that answer and come out in four months being wrong, so I must caution that there is a tendency to say: “Here are all the slots. Plug in the fillers of those slots.” You may have garbage in, garbage out, quite frankly.

I spent an awful of time on this in my early career, trying to forecast what energy prices were going to be. I worked for a gentleman, one of the outstanding oil analysts in North America, back in 1966, and I worked for him for the purpose of proving that the long-term equilibrium price of oil was \$1 a barrel. So I am sympathetic to the problems in terms of what forecasting can do to you.

Given that, it is our understanding that Ontario Hydro has really developed a considerable expertise, in terms of both the way it does things and the way it checks its forecasts. But there is, in the process, a top-down approach and a bottom-up approach to forecasting. Our understanding as a panel was that the bottom-up type of forecasting needed a commitment of more resources.

Lest anybody think that Ontario Hydro or other types of institutions are totally remiss in terms of saving money, it seems to me, having looked at it, that the economics department could use some more money to fulfil the tasks that are required. Essentially, that is what the basis of our forecasting comes to, that there are certain needs; you are not going to get the answers through forecasting on demand.

But as my colleague Jim Litchfield has pointed out, in terms of the process, load forecasting is an absolutely critical stage. So you have to do the best you can, even though, despite what economists say, it is an extremely imprecise and inexact art in forecasting, and to spend an awful lot of money on the science of forecasting is probably coming at it from the wrong side. But our view is that Ontario Hydro, given its strengths, can build on those strengths, particularly in this bottom-up type of effort to see what it is going to need.

I think that is enough. Somebody else may want to add something.

Mr. Chairman: Mrs. Sullivan, do you have some questions?

Mrs. Sullivan: One of the things that struck me about your report, and we spent some time on it this morning, was your feeling that in fact Hydro had gone one step beyond a strategy document into the first step of the planning phase. All the way through the DSPS, there are a fair number of options, of balance of choices that are laid out there, that fundamentally are based in many ways on the load forecast, although some of them are prescribed by other sources like government or whatever.

Several times, not only at this committee but also in the past and in the public press, we have heard criticism of the width of the band in Hydro's forecast. I wondered if you could comment on your views on that, plus on what you see in other jurisdictions in terms of the width of the band. Are we better to be safe than sorry, or is it the other way around?

Mr. Beigie: Jim, why do you not take the other jurisdictions?

The general feeling of the panel is that those bands are so wide, on out in time, that they are almost useless. Out in time, five or 10 years, you just have the thing explode in terms of relevant considerations. There is awareness on the part of the people we have been talking to that in the kind of environment we have lived in in the last 15 or 20 years, this tends to exaggerate the width of that band. If you had a stable period in the past, you would have a much smaller width to that band, but given the high degree of fluctuation we have had in economic events around the world in the last 20 years, that tends to exaggerate as you carry out in time.

There are other approaches. In our discussions we have learned that Ontario Hydro is aware of those other approaches and there are efforts being made to improve that particular approach, but Jim Litchfield has experience in other jurisdic-

tions which might be helpful to answer your question.

Mr. Litchfield: The Pacific Northwest power system for the states of Washington, Oregon, Idaho and Montana—it is the western half of Montana, not the entire state, but it is the entire jurisdiction of the other three states—is a power system that is not substantially different in size to Ontario Hydro's system. We use different terminology. We are predominantly with hydro, so we are not capacity constrained, we deal with averaging of energy. Current load is somewhere around 16,000 average megawatts; current peak load is around 30,000 megawatts.

Our range in 20 years for that region has a range of uncertainty and energy of about 11,000 to 12,000 average megawatts. I do not know what the peak load range would be, but using a conservative 50 per cent load factor, we are probably looking at a range of 16,000 to 18,000 megawatts on capacity, where Hydro's range is 26,000.

That range looked very broad to me, but more important than that, we think our range bands the range of reasonable planning uncertainty, so we do not plan for events outside of our range. They indicate that they think their range only covers 60 per cent of the likely outcomes and that there is a full 40 per cent probability of being outside of even the 26,000 megawatts.

To give you an idea how big a range that is, the panel calculated on the top of page 21 that 26,000 megawatts in load uncertainty equates to 30 new Darlington-size Candus; so 30 plants in 20 years.

That kind of planning uncertainty is something that really struck us, because to try to plan for that range of uncertainty with a resource that has 12- to 15-year lead times, you are going to have to commit to a lot of those resources right now and your chances of being wrong are phenomenal.

If you plan to, say, the medium, and you plan for 15 Candus and you get low load growth, you are off by 15 plants. Likewise, if you plan to the medium and you plan to build 15 of them and you get high load growth, you are 15 short.

That kind of a planning problem is a very difficult problem to deal with and that imposes an incredible amount of risk. If that is the true range of load uncertainty, it imposes an incredible amount of risk on the entire planning exercise. It puts an awful lot of emphasis on looking for extremely short lead time, very small plant size, very small units of energy that you can acquire to try to meet your load growth, so you just wait and see what is going to happen and you can build it at the last second if you need it.

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Unfortunately, in my experience, there are not very many resources that fit that bill, so there are some real reasons for additional research here to try to define whether this 60 per cent probability of 26,000 megawatts of load uncertainty is in fact real uncertainty or mathematical analytic uncertainty that is not really credible in terms of a balanced scenario.

The way we do it is entirely different from the way this range uncertainty was constructed. We construct scenarios—one high, one low and a couple in the middle—and these scenarios are internally consistent. One is internally consistent very pessimistic; one is internally consistent very optimistic. In our optimistic, we might put in a trade agreement; in our pessimistic, no trade agreement, or vice versa depending on your opinion about how the trade agreement works.

Mrs. Sullivan: Depending where you start from.

Mr. Litchfield: Right; depending on what side of the fence you are on.

Mrs. Sullivan: Basically, in your jurisdiction, you are relying more on the end use of forecast than Ontario Hydro has so far.

Mr. Litchfield: Yes.

Mrs. Sullivan: Ontario Hydro is, as I understand it, introducing those kinds of new economic forecasting into its program, so your prediction then would be that it will be able to shrink that bandwidth by the introduction of new research capability.

Mr. Litchfield: I think that is correct. There are two aspects. End-use load forecasting is particularly useful in linking up your conservation assessment and your load forecast. That analytical loop we showed in figure 2 is almost impossible with econometric load forecasting techniques. End use is very important to be able to ensure you are treating conservation appropriately and as accurately as you can.

End use in itself will not necessarily narrow the range, although a lot of this range of uncertainty is being driven by historical patterns that Hydro is replicating in its econometric models. I think going to a scenario-based approach will tend to bring the range in, because what we find in our scenarios is that it becomes impossible to create the kind of load growth that used to be very popular, because you cannot keep a balanced scenario at that level of growth.

Let me give you an example. The level of growth that was forecast in our region just prior to the formation of the council I work for was a

20-year compound growth rate of about seven per cent. It is a very rapid growth rate. Seven per cent doubles your load in about 10 years, so things are really booming.

When we developed end-use load forecasting models and then tried to put together a booming scenario for the economy of the northwest, the highest load growth we could get to was about two and one half per cent. The reason for that is that as you grow very quickly, you have to build a lot of new resources that generally are quite expensive and cause rate increases. As those rate increases sink into the economy, people switch to other fuels or you just throttle back economic growth. It just cannot tolerate the kind of rapid rate increases we would have to have in order to have very rapid acceleration in growth. A lot of existing industries that are relying on very low-cost electricity leave, so there is some reshuffling that goes on and you just cannot hold up the seven per cent growth rates that we used to think were possible.

Mrs. Sullivan: I understand that when the economy is growing—say at the pace it has been growing for the past two or three years, say around 4.5 per cent—indeed the load growth outstrips the growth in the economy and that the load growth is more in the range of 5.4 per cent. How do you build that kind of prediction about the economic cycles into load forecasting?

Mr. Litchfield: There are two different types of forecasting that are generally done in the power business. One is short-term forecasts. They are primarily done for rate-making procedures and in short-term planning, the kinds of policies you are going to put in place that are going to affect your expenditures in the next few years.

Long-term planning is done on a completely different basis. For the short term, you want to try to take into account the business cycles that are going on. They are very important. If you are running at 100 per cent plant capacity or 50 per cent, it makes a big difference on how you might set your rates in the next year.

In long-term forecasting, you are more concerned with long-term trends in a particular industry. So you want the utilization of equipment in that industry to be representative of what it is likely to be in the long term. There will be short-term cycles higher and lower than that, but in the long term your expectation is that they are going to operate at 75 per cent or 85 per cent capacity.

Mrs. Sullivan: So there is a built-in assumption?

Mr. Litchfield: There are built-in assumptions for each industry, studied by industry experts who look at how that industry operates, what its characteristics are and what kinds of reshuffling or competition there is within the industry. You put together long-term forecasts based on long-term expectations. You do not try to track the short-term swings.

The reason you see electrical growth grow more rapidly than economic growth is that when you are coming out of a down cycle, you see a lot of resurgence of plant capacity that was just underutilized, so it looks like load growth. It is just an opening back up of plants or going to two shifts instead of one, or three shifts instead of two. All of that is readjusting. It looks like long-term load growth, but it would be a mistake to build resources based on those kinds of signals because it could go away just as quickly as it came.

Mr. Beigie: That is a key point. It is reversible. On the downside, you will have a different type of story.

Mrs. Sullivan: I want to move back to the end-use predictions as well. I do not know how much further ahead, by example, your power authority is than ours in terms of the introduction of conservation technologies and efficiencies and so on, but Hydro has certainly been active in pilot projects in terms of increasing efficiencies and emphasizing different kinds of pumps and so on. That will indeed, in the long term, reduce the requirement for electrical supply.

But in terms of building those experiments which are now, in many cases, still very much at the experimental or pilot project stage into a longer-term forecast, I find it very difficult to understand how you can predict at this point—given a different society, a different kind of choice, a different economic structure and so on than exists in your jurisdiction—the ultimate impact of really very limited experience in terms of long-term conservation techniques and technology.

Mr. Litchfield: You are exactly right. I did not quite hear a question there. I agree with the statement.

Mr. Beigie: Could I just comment. There is an old line among forecasters. It is extremely difficult to do, especially with regard to the future. Essentially you are confirming that. You have to do the best you can. The point you are making, it seems to me, just reinforces the notion the committee has that adequate resources should be included in the budgeting of Ontario Hydro, or

anybody who has to forecast into this kind of very uncertain future.

There is no question that the end-use forecasting models they use really are relying on the coefficients they use, and those coefficients have changed. There is no question about it. The process of determining how much they have changed is going to take some money, unfortunately, from the customer's standpoint, but better planning will require some resources in that area. As greater knowledge is obtained in certain conservation types of approaches and in those coefficients that go into the planning, the load forecasting model will improve.

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Mr. Adams: Mr. Litchfield, you were elaborating on the probability in load forecasting and so on, and I can see that everything else is built on the load forecasting part of the report because there are all sorts of other forecasts that have to be done. There is your chapter 7, for example, about probability-based risk assessment and so on.

Perhaps I could just read the part that, really, you have been elaborating right now, which is on page 41. "Hydro's load forecast, as we have seen, has a very wide range between high and low, with still only a 60 per cent probability that actual demand will lie within the range." I understand it completely. You explained and you have given us an indication of what that means in real terms. "Hydro has also identified a 'most likely'"—I assume that is in quotes because this chapter deals with statistics and you mean that it is not most likely in statistical terms—"growth curve lying roughly mid-range. Hydro proposes that 'demand options will be implemented and supply options will be committed in time to meet the most likely load growth economically and reliably.'"

I think I understand that, but if I could give you an analogy, if you are travelling across country with a compass and you are going to a certain point—let's say that point is on a railroad line; that is, here—what you do is work out where this point is and then you might say, "Well, we will proceed towards it." But of course there is a risk that you are going to miss the point. As you know the railroad is there, the strategy you use is you go either to the right or to the left. You know you are going to arrive at the railroad track and then you know you have to go either right or left to get to the point you want to get to.

In reality, with an organization like Hydro, does it go towards whatever this most likely position is, however that is defined—I can well see it is difficult to do statistically—or does it not

in fact go towards the higher end? In other words, they say, "Even though the chances of these high demands in the future are very low, we cannot afford the risk of being faced with that and we will go high."

Mr. Litchfield: I do not know that there is a pat answer for that, because it is largely a function of the management that is Hydro during the time. What they say in their report, as best I remember it, is that in fact they are going to go to the middle; you know, the most likely line. Then if they see things developing partway along that line and it looks like the line is too low and they are going towards the high, they will take some sort of emergency action to try to get there. Conversely, if they are partway along and they see things going towards the low, they will back off and slow down on some things to try to adjust also.

This is kind of difficult because it involves a series of techniques called decision analysis on how you manage risk, but the problem in shooting to a line and feeling relatively comfortable with that general strategy—because you have some strategies to adjust, either high or low—is that you can miss the fact that if you are planning to that line with a long lead time and very large plants, your ability to adjust is substantially less than if you are planning to that line with a short lead time and small plants.

It is just basically a fact that because of the lead times, if you get into some long lead time resources that are very expensive, your ability to back off as an organization is severely limited. Financially, everything is driving towards the completion of those projects and your ability to recognize that the world has changed is diminished.

We have a real example of that in the northwest. We tried to build five nuclear plants simultaneously, and for the entire 1970s and early 1980s we failed to see that loads were not growing. When we found out that loads were not growing, we had \$3 billion invested in plants that were terminated or are currently in mothballs, being stored partially complete, and only one of the five got into operation. It was a very expensive lesson in this kind of risk, that once you get committed to a course it is sometimes hard to back off and it is hard to recognize that you should back off or that you should go faster. You tend to set up for that particular line.

The alternative is to try to recognize through different kinds of analysis that there is a very uncertain range here, that you commit some of your long lead time resources, if they are very

inexpensive, to meet the high probability loads, the ones down near the low. You know with very high probability you are going to get that amount of load growth. You do not use long lead time resources to meet the very unlikely load, at the high. You use short lead time, small plant sizes.

Mr. Adams: I understand that in principle. I am certainly not trying to rationalize things from Ontario Hydro's point of view, but if, for example, in some way you could have a referendum on these projections, these forecasts, my instinct is that the public would err on the side of covering the high end. You understand what I am saying?

Mr. Litchfield: Yes, I do.

Mr. Adams: I do not believe Ontario Hydro jumps every time the public does something—I certainly do not believe that—but on the other hand, the little scenario I tried to paint for you is Hydro ensuring in a way the public itself might—by the way, partly because it does not trust the forecasts; nor do you.

Mr. Litchfield: I can see what you are saying. I am not versed in public opinion in Ontario, so I assume that is true. It was true in the northwest for quite a while, too. Generally, public opinion was that the biggest problem we had was supply; we had to have enough. When we experienced 500 per cent rate increases in the late 1970s and early 1980s over about a three-year period, it became less important to have reliable supply. It became much more important to have the cheapest resources available. The problem with public opinion is that it sometimes is not informed on all the tradeoffs. Some of these tradeoffs are very complex and it is not clear that the linkages are there.

We have had many of our major industries—we have a major industry that makes aluminum from electricity. They are called the direct service industries. They are very large consumers of electric power. They consume about 2,500 average megawatts at full plant capacity. For the entire period of the 1970s, their argument was all focused on availability of supply. Their rate at that time was around three mills per kilowatt hour. They did not really care much about the cost of electricity. It was not a significant component of their power cost. Right now, they are paying about 29 mills per kilowatt-hour; 2.9 cents. Now they are very concerned about the rate and less concerned about the supply. Everything shifts back and forth.

Mr. Adams: Mr. Chairman, just one more: I realize you cannot put this into millions of dollars

or into people or something, but to raise the 60 per cent probability for this wide range, that is an awful figure. What would be the cost, say, in some qualitative way of raising that to 80 per cent probability?

Mr. Litchfield: I cannot answer that because Hydro did not give us enough information to be able to answer that question. They only told us that with 60 per cent probability, they thought they could band 26,000 megawatts. They told us that therefore 40 per cent probability was outside that range. How it is distributed, I do not know. I do not know whether it is 20-20: 20 above the high and 20 below the low. It probably is, but I do not know that. I do not know of the 20 per cent how far I have to go to get the next 10 per cent, assuming it is equally distributed. It may be a long way out.

We are talking about the tails of distributions and I just do not know the shape of them. It is possible. Subjectively, in my own mind, I would think that going to 80 per cent is going to substantially expand this range. I would say maybe up to 30,000 instead of 26,000 would not be unfeasible. The cost of that, another 4,000 megawatts at—what are they, 800 megawatts at Candu or 900 megawatts at Candu? It is a lot.

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Mr. Chairman: I have Mrs. Grier, Mr. McGuigan and Mr. Passmore on the list. I would like to adjourn for lunch around 12:20 or 12:25, so perhaps the questioners and answerers could keep that in mind.

Mrs. Grier: Maybe there is no answer to mine, because I was going to ask, first of all, how much you felt the band of uncertainty could be narrowed by better end-use forecasting. I suspect you are not ready to put a figure on it.

Mr. Litchfield: I could not, because the process is not guessing what the relevant range is; the process is the important product, and the problem is that in the reports we have seen thus far, Hydro did not take it through to its logical conclusion. I think if they were to implement what Mr. Beigie and I have been saying, we would see how much narrower the range might be; and we could be wrong, it might be broader.

I really do not know where it is going to go. We just were not very satisfied with the approach used to come up with this range, and if this range is real, they have a very large risk to deal with in their planning.

Mr. Beigie: Could I go back? There is a tendency, I think, for people to think of these numbers as totally arbitrary on the part of Hydro.

It is not. If there is an arbitrary nature to it, it is the very precise forecasting method that they use.

I go back to what I said earlier. Given the fact that they take an average over a past period of time, it is kind of like it will be within one standard deviation, plus or minus, of the mean. How far that goes is a function of what has happened in the past. I think there is an awareness, certainly on the basis of people I have talked to at Hydro, that the past extrapolated into the future in a distant point is just totally unrealistic, so there is serious effort in terms of figuring out whether that is any longer the appropriate choice.

But again, it is not arbitrary. It is not something they decided to pull out of the air. The point is that the past has been somewhat arbitrary in terms of what it has visited on us today and we continue to see that being built in to the future in terms of the statistical distribution they have chosen to use in their analysis.

Mrs. Grier: The previous select committee that reported in 1986 recommended that more resources be put into end-use forecasting. It also recommended that Hydro publish for public comment and for expert review its draft load forecasts. I wonder if you feel that would be a useful process to go through.

Mr. Beigie: I know a number of the people they include in their panel to review. It is not a closed shop.

I know the public likes to know everything, but there is a question as to what the public could do with some of these things. Sure, the panel as a whole is very much in favour of openness and believing in the democratic principle that the more we know, the better we will do. I am sometimes questioning of that as a reality in fact. But certainly, on the basis of what I have seen, I think Hydro—and it is not the only institution where this can be said—is as anxious as anybody else to find some magic solution, “Golly, if you’ve got truth, we want you.”

I certainly think that the recommendation is one worth considering very carefully.

Mrs. Grier: I was interested in Mr. Litchfield’s comments on how in the northwest power planning you made sure you had internally consistent models. I am wondering if you know enough about the models Hydro uses to comment on whether that same consistency is evident in the models it uses.

Mr. Litchfield: I think it is possible, but in the reports I have seen thus far, I have not seen it demonstrated.

The first step in assessing demand-side management measures or conservation programs and how they might operate is largely one of engineering economics. You go to people who are experienced in building commercial buildings and you use some prototypical buildings and you go through different alternative designs and you identify the kinds of things they can do to make the building more efficient and what that costs. Then you model the buildings and you use thermal heat transfer; it is fairly engineering oriented.

Our process does not stop there, because that tells you one part of the puzzle but it does not tell you all of it. You then need to simulate how those programs are going to operate with end-use load forecasting models so you can see what consumers would have been doing anyway, what effects programs that are designed to achieve those measures have on things like fuel choice, what happens with building types and practices anyway which you have already included in your forecasts.

We pass all our conservation programs back through our load forecasting models and try to simulate as best we can what the effects of those programs will actually be. You see a lot of things occurring there which you would miss just by an engineering analysis. I did not see that in Ontario Hydro’s reports I have seen. Maybe they are doing that.

One of the big things in conservation is that the cost side is fairly well known. It is not all that hard to cost out conservation measures. Sears Roebuck catalogues are a great source of what you can do with air-conditioners or water heaters or refrigerators. It is not that difficult and there is not that much uncertainty about it.

The performance side, though, how much you will actually save or how much you will actually reduce loads, is tremendously uncertain and it varies over time; it changes as conditions change. There is an effect called a takeback effect, which you can only see by trying to simulate how consumers are going to respond to this. When they receive some efficiency improvement and see that their electricity bills are going down, they tend to decide to consume more of the product, to take some of it back in the form of better amenity levels, we call it: more comfort, warmer, for a factory to run harder, to produce more product.

Some of those takeback effects are very difficult to analyse and to understand; it takes an awful lot of effort, and I would not claim we have it. But by trying to simulate it in the load

forecasting models, you can get to the problem and begin to understand its effects better than you can by not doing it.

Mr. McGuigan: Here in Ontario, where we sit so close to the very large United States market—overnight trucking and millions and millions of people in the northeast US—I wonder whether we can really do intelligent planning or planning that is going to have any degree of accuracy, if in fact the decision is not a political decision that we are going to industrialize as a province, we are going to give up trying to save our agricultural land, we are going to make a lot of political decisions, put the capacity in place in the almost sure and certain knowledge that industrialization will follow.

What I am saying is that if you build a Highway 401 or you build a bypass of the city, the first thing you know, there are three times as many vehicles on that as you engineered for, simply because the facility is in place and development follows.

You go back to when our party was in opposition and we were very critical of Hydro and therefore the government, because at the time there was a 40 per cent oversupply of electricity and we were looking at the associated carrying costs and so on. Yet, in a matter of about four years, we are at zero overcapacity, and I take it that if it were not for the co-operation of the public, we were at a minus situation.

The thought comes to my mind whether it is not more of a political decision than it really is a matter of forecasting all these various elements and bringing into it the takeback, people deciding: "Well, Ontario has relatively cheap Hydro rates. It's a great place to live. It has a good health care system, good transportation. It's a good place to come and manufacture items." It is more political than it is econometric.

1220

Ms. Hamrin: I think this brings in the issue Mr. Litchfield raised earlier of the importance of using scenarios, because by using scenarios, as you see certain political conditions changing or new decisions being made, you can construct things that are internally consistent and then get your forecast out of that. It may be a much more accurate way of predicting where you are going to be than by simply looking at the current use of electricity and extrapolating that line out. I think just that kind of scenario building that Mr. Litchfield alluded to earlier is what takes these political considerations into effect that straight econometrics does not do.

Mr. Beigie: One of the more well-known forecasters, Henry Kaufman down in the United States, bases his forecasts on the assumption of no policy change. Your question implies that politics is unpredictable. Maybe so, but scenarios really give you the what-if types of forecasts.

But the fact of the matter is that when forecasters get into the business of trying to forecast political events, it is trouble. Mr. Litchfield said that in the planning process—and I think this should be reiterated—you plan on the basis of what you have clear knowledge of today. If the knowledge changes subsequently—a proper planning process, by the way, is incredibly dynamic. It has to be going on all the time. That is the key. Weather is different from what the planning definitely is, and you have to take that into account.

Mr. Brooks: I just wanted to observe that the last question relates somewhat to our recommendation 6 on page 22 and what precedes it. It is interesting how in this country in a number of provinces, even today, the main focus of debate on electric utility load forecasts is whether the official forecast, and that is a term that I think Hydro uses too, ought to be 2.7 per cent, 2.9 per cent or 3.1 per cent.

I think we are all in agreement on this panel that if you took a different philosophy of approach, you might not have an official forecast. You would have a document that is put out, say, every year or periodically, which would be the official forecast document, which would discuss future loads. But the exercise is surely not to have agreement among the utility regulators, the government and the public on whether the official forecast ought to be 2.7 per cent or 2.9 per cent; it ought to be a presentation of what the future looks like.

As we say in recommendation 6, the different possible forecasts, the assumptions that lead to those forecasts, what is behind them and so on would all be there. The energy of groups like this committee and the public generally would be on examining those and deciding which way it was reasonable to go or which way the people generally wanted to go. But it would not be, as I say, on reaching agreement on what the future load will be because everybody knows that will not happen.

Indeed, in the federal arena, there has been a current sort of wave towards getting away from line forecasts, but rather presenting a band and having discussion as to why the load might be higher or lower within that band and what it means now. What do you want us to plan for?

Mr. Passmore: Just a quick question to Mr. Litchfield to provide a possible point of clarification. There was a question raised earlier about demand management and some fairly experimental technologies. You left the impression that perhaps a number of demand management technologies were experimental and that there were no other options. I assume there are other options that could be integrated in the short term into a planning process.

Mr. Litchfield: If I left that impression, it was absolutely wrong. Most demand management options that I am familiar with are not experimental at all. A lot of them are really conventional. Later, when I was talking about Sears Roebuck, I meant that, really, there are a lot of things available on the market today. All of our planning has not reached any technology that is not readily commercially available in the Pacific Northwest. The council is aware of far-out things that are being tried, but none of those are

included in our planning until they are available to your local outlet.

What I was referring to is that there are a lot of new technologies being developed that use electricity in new ways. Microwave drawing is a popular new technique; there is induction heating of billets instead of thermal heating; there are a lot of what are called electrical technologies that are coming to the forefront right now. Many of them are efficient, from an electric-use standpoint, but they are new uses of electricity. They are actually load growth, not conservation as such.

I did not mean to imply that it is far-out technology. The stuff we are looking at is very conventional.

Mr. Chairman: Thank you, Mr. Passmore. We will adjourn the committee until two o'clock this afternoon and we will pick up with chapter 5 at that time.

The committee recessed at 12:27 p.m.

AFTERNOON SITTING

The committee resumed at 2:05 p.m. in room 228.

Mr. Chairman: May I call the afternoon session to order, please, and ask that everybody take his seat or at least sit in his seat? I would prefer that you leave the chairs in the room.

I will pick up with chapter 5. Perhaps the panel could explain and give us a brief background into the recommendations contained in that chapter and the reasoning behind them. That would be helpful.

Mr. Brooks: First off, Jan Hamrin is going to make a few comments on it, and there may be others following that.

MINISTRY OF ENERGY

Ms. Hamrin: This report was truly one of the entire panel, so we are trying to alternate comments by the various members. As you can tell as we go along, there will be opinions held by each of the panel members on each of the topics. It just happens to be my turn on this particular chapter.

The main point is one that we got into earlier and probably encompassed in figure 4, "Electricity Conservation and Supply Function for Ontario Commercial Sector." It is not, in our opinion, possible to automatically exclude options early on in any areas, whether they are supply or demand-reduction areas.

By doing conservation and supply functions, which are something that has been done for quite a period of time—and a lot of expertise and knowledge is already available on the topic—you can have a whole range of potential demand-reduction opportunities and their costs ranged out. That allows you then, when you do the enterative processes we talked about this morning in long-term planning, to come to some conclusions about the ones that would be cost-effective to use and how you would structure a program around them.

I think our main point in this chapter is that we feel Ontario Hydro should develop, for each major end-use in the Ontario economy, a comprehensive assessment of the expected costs of the potentially cost-effective conservation measures. It is easy to give lipservice to conservation. Everyone knows conservation is a good thing to do, it is fine, and then we drop the subject and go back to the old standby, talking about building new power plants.

We feel, instead, it is not only something to which you give lipservice, but you really integrate it into your whole planning process. You make sure you do not double-count—have conservation measures counted as having already reduced load at the same time as you are planning on bringing them in on the supply side—but you do an accurate assessment of the opportunities and the cost-effectiveness and you adopt a policy to implement the cost-effective conservation measures that would pay up to the lesser of the avoided cost of new generation resources or the full cost of the conservation measure. If you would otherwise have to build 1,000 megawatts or 500 megawatts of new generation and you can reduce your demand by that much through conservation, then it can be worth up to what it would otherwise cost you to provide that generation; or if you can provide the demand reduction cheaper by paying for the whole measure, fine.

1410

We feel it should be evaluated in the same context as the supply-side options and that there is a lot of potential, a lot of opportunity, in the demand-reduction side that has previously not been considered in other places. We wanted to make sure that it was considered here.

Do you have some things you want to add as well, Mr. Govier? We will sort of go down the line.

Mr. Govier: I do not know whether it will be helpful, but I would be happy to explain figure 4.

Mr. Adams: That was my question.

Mr. Govier: You will note that our recommendation 10, appearing on page 29, is that Hydro develop a complete set of conservation supply functions for incorporation in its process. Figure 4 on the preceding page is a typical supply function. It appears here just for illustrative purposes. This one was developed by a consulting firm and it relates to cost as of 1985. It also relates to the commercial sector in Ontario.

You will see on the vertical axis the unit cost of energy in cents per kilowatt-hour. It goes up to six cents. On the horizontal axis, we see the quantity of energy saved in gigawatt-hours. What this means—and again, this is illustrative for the commercial sector—is that if energy cost only one cent per kilowatt-hour, then reading off the lower scale, 3,000 gigawatt-hours of energy could be saved by conservation in the indicated

areas, which are efficiency of motors and one degree of sophistication of conservation in lighting. This is commercial lighting. If that was the cost of energy, just one cent, then other conservation activities would be uneconomic, because they really relate to energy at a higher cost.

On the other hand, if the cost of energy was three cents, then reading from the lower scale, you can see that something like 10,000 gigawatt-hours of energy could be saved at that price level.

The importance of this is that in the planning process, it enables one to determine which conservation activities are economic and which are not economic. Clearly, it would not be economic to introduce a conservation activity where the equivalent cost was six cents a kilowatt-hour if the going rate for new supplies was four and a half cents. So this conservation supply function is a critically important piece of information to have, and it should be available for each sector of the market. Of course, it should be appropriate for the particular region, and the data should be current data, not 1985 data, as this is.

Ms. Hamrin: One of the keys to the things that Mr. Govier was explaining is "compared to the cost of new power." If you are looking at bringing in new generation, you are comparing these conservation options to the cost of new generation, not to the cost of the average kilowatt-hour on the system now, because you are going to be bringing it in in order to displace the need for some new generation.

Mr. Adams: I do not want to interrupt the presentation, but I understand all of those points. Perhaps you could just bear with me for a moment so that I can read it. On the level-one lighting and the motor's efficiency, if we were dealing with the one-cent level, they would provide those savings. Does that not mean that they would provide more savings if we were at the six-cent level? If so, how do I read that on the diagram?

Mr. Govier: We read it in a cumulative sense. If new energy costs six cents, then everything on this chart less than six cents would be economic conservation.

Mr. Adams: I see it now.

Mr. Chairman: Are there any further comments from the panel?

Mr. Brooks: Those appear to be all the comments we have for now. There are a number of recommendations, but it might be better to see if there are questions.

Mr. Chairman: Are there any questions?

Mr. McGuigan: Bearing in mind that I think Mr. Beigie made the remarks this morning about the credibility of anybody who is questioning the credibility of anyone but himself, I am wondering if those recommendations—and I think they are very sound recommendations—should be carried out by Hydro or perhaps by the Ministry of Energy. In sort of projecting ourselves to the public, which of those two might we expect it to view as the most credible?

Mr. Brooks: The respective roles of any provincially owned electric utility such as Hydro and the role of the corresponding government is a significant point. That, of course, could vary, depending on what provincial legislators might wish. We saw each of these recommendations, except where otherwise indicated, as being something where Hydro would initiate it and then there would be a monitoring and a review by either the government itself or some body which it might mandate to do that.

The initiation of a number of these things is probably more difficult for a body separate from the utility to do. I think that is the panel's view. We have made recommendations; for example, recommendation 8 on page 25, where we suggest that Hydro and the government together ensure that conservation programs are specifically designed to reach users who might otherwise not participate in them. I think on balance in most of these—virtually all of them—perhaps the initiation should come from Hydro.

Mr. McGuigan: I think you said perhaps they are the ones with the most expertise. Did I interpret you correctly?

Mr. Brooks: That is correct. One would expect the utility to have the expertise. That is not to say the government might not decide differently, that it wants Hydro to be in a position to respond to statements of policy and approaches that might be put out by some body which today does not exist but which could exist if the government decided to set it up that way. As it appeared to us today, that seemed to be the way it would work.

Mr. Govier: I think too that Hydro would be in a very good position to provide the information from its own records and it would be easier for it to put together these conservation functions as one example than it would for, say, the ministry.

1420

Ms. Hamrin: I think the point is that if it comes up and if, say, I am an advocate of superefficient lighting, a very sophisticated type

of lighting, and if it has been made explicit what the basis was for Hydro's evaluation, I could disagree that the costs are this high and I could come in and present evidence to show that I could provide lighting of level three, actually at two cents a kilowatt-hour. That would then narrow the scope of the discussion and it would be apparent to people what it was that was being debated and on what level.

All the way through, I believe our intent is to try to make these things as explicit as possible so that everyone does understand what is being debated and whether there is a difference in agreement on what certain aspects cost or whether it is strictly a matter of your leaving out my pet project when I think it should be in, no matter what it costs. I think it helps to clarify and to focus the debate so you will get a better quality of product out the other side.

Mr. McGuigan: Just to use a short analogy, I think it would be more believable if you had General Motors tell people, "You should be walking instead of driving a car." It might be more believable if they say it than if we say it.

Mrs. Sullivan: I am quite interested in your recommendations in this area, particularly not having sat on previous select committees but having looked at some of the recommendations and the whole almost suspicion of governments and opposition parties in the past relating to central planning functions, if you like, of Ontario Hydro and how much power Ontario Hydro has had.

One of the things I want to be certain about in your recommendations here is that you are not saying that Ontario Hydro ought to be a social planner or an economic planner for the province, that you are really talking about very specific programming and planning mechanisms and that the policy, the thrust and the direction are still ultimately legislative and ministerial requirements through a different process.

Mr. Brooks: That is correct.

Mrs. Sullivan: One of the things you raised relates to people who cannot take advantage of, for example, conservation programs in a cost-effective way. They might include people in apartment buildings or whomever. What do you believe, given that scenario, is the responsibility of Ontario Hydro in comparison to the responsibility, by example, of the Ministry of Housing or the Ministry of Energy in terms of making other kinds of demands that Hydro can meet through a delivery system?

Mr. Litchfield: The reason that motivates Ontario Hydro to act in this kind of a framework

is really to achieve the lowest total cost of energy services to its consumers. At least in my opinion, I do not see it as social engineering or major public policy; it is mostly trying to decide what is the lowest cost.

To get into some sectors and subsectors requires particular program designs that are different. We have recognized this, or found this out in the Pacific Northwest. Low-income and renters, the two you have mentioned, are very difficult subsectors or pieces of the residential sector to attack with conservation programs. They have specific problems that have to be dealt with differently to how you would for the general residential sector as a whole; so we have designed special programs and given them our highest priority, not for social reasons but because they are very difficult pieces of the overall conservation potential that we want to try to acquire and they take special tools to be able to attack that resource, to be able to acquire that resource.

Mrs. Sullivan: And you have done that in the absence of a policy direction?

Mr. Litchfield: That is correct, yes.

Mrs. Sullivan: You have done it simply as a management—

Mr. Litchfield: Well, there is a certain amount of policy in it in equity. At least for our council, there are obvious concerns in running conservation programs of all types. If a large conservation program is running and benefiting just a few, there are equity problems caused by that. Because of the problems posed by low income and renters as two particular areas, we have recognized that there would be a disequity by running just bland conservation programs that required substantial amounts of cost-sharing, for example. In the area of both low income and renters, we have been looking at not having any cost-sharing, paying 100 per cent of the cost, and we are still having a great deal of difficulty in penetrating those sectors.

Mr. Brooks: I was just going to make sure, once again, that in our recommendation 8, we recognize a role for government.

Ms. Hamrin: In California, a number of the programs have been recommended by the legislature. There may be aspects of them that are carried out in other sectors through housing or through other offices that may have special weatherization programs for low-income people, so it is not always done, necessarily, by the utility. We recognize the constraints on the utility and what its interests may be, in that from a

policy viewpoint you may have other reasons, in addition to those that are related just to electricity efficiency, for wanting to move forward; so there very frequently will be other kinds of governmental programs. Or, as government, you may recommend that the utility set certain priorities, because you recognize other difficulties in this sector or the difficulties of reaching it, which then gives direction back to the utility. As Mr. Brooks just mentioned, we are very aware that there is a definite role for government in setting priorities and in pointing out, particularly, areas that have other social and economic reasons for wanting to move forward.

Mrs. Sullivan: Can I just ask a very specific question about your jurisdiction? Does your utility see itself as being involved by example in regional development issues?

Mr. Litchfield: No. We have 140 utilities. They are all over the map, I am sure, in how they see their roles. Generally, no. To some extent, they try to provide stable, low-cost rates to attract new industry and encourage economic development, but they are not the primary tool for that. They are a facilitator, if you will. The primary drivers in the region are through the state government.

There have been a few instances of special incentive style rates being offered to try to encourage industry to move in, and that has been kind of company-by-company specific. It is not very widespread.

Mrs. Grier: Do I take it from what you have said that you are not opposed to mandatory conservation then?

Mr. Litchfield: Not at all.

Mrs. Grier: Just generally, as a consensus.

Mr. Litchfield: I think Mr. Brooks pointed to the panel's recommendation on this issue in recommendation 8 in that specifically we were getting at a couple of things there. One was the issue of low income and renters, and we spent a fair amount of time talking about the difficulties of attacking those subsectors and doing it in an equitable way. We also spent a fair amount of time talking about certain areas being very difficult to achieve conservation except through legislation—standards, building codes—and certain kinds of legislative remedies are far superior to programs.

Mrs. Grier: We have the additional barrier of the distribution system being at the municipal utility level, with the Municipal Electrical Association very firmly of the opinion that any

demand management has to be optional. That is a hard one, but I guess it has to be overcome.

Mr. Litchfield: We have much the same problem, although it has changed over time. Right now we have a very high level of utility support for new building codes in the Pacific Northwest. There is still an awful lot of political opposition to it, but we are moving closer day by day to achieving a level of efficiency in new building standards that would achieve all cost-effective conservation. In the supply curve you were shown an example like that. It would take everything that is lower cost than new generation would be.

Mrs. Grier: But is it not much easier to do it with new buildings and new equipment than it is to retrofit and try to bring existing plants up to these standards?

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Mr. Litchfield: Exactly. In fact, similar to Hydro's condition in the past few years, the northwest has been very surplus. So we have identified two different categorical types of conservation. One of them is called lost opportunities, and it is new buildings. These are opportunities that you have during the time of construction and, if not taken, you will lose them for the life of the building. They really become uneconomic after the building is constructed.

The other type of conservation is discretionary, and that is more like weatherizing an existing home. The home is likely to be there for the next 20 to 30 years. We can do it just about any time we would like, so that is driven more by the needs of the power system and when we need additional energy resources than by the fact that it is either here today or gone tomorrow.

Mrs. Grier: Finally, regarding the section you have on page 29 about demand options and load forecasting, I have read it and I think I understand it, but when I read it again, I am not sure I do. Could you express that again or explain it more simply? What bothers me, I guess, is that I see demand management as a supply option; yet you are saying, "Build it into your forecasting."

Ms. Hamrin: I think, first, you want to make certain it is not double-counted, counted in both places, when you can only get it once. Second, you want to make sure that it is not ignored entirely, that it is not assumed it is going to be on each side and does not appear on either. Part of our point is just making certain that you are accounting for conservation; that you are neither double-counting it nor ignoring it; that you are taking it into consideration one place or another

and that your forecasting is balancing those things; that you are checking both places for the conservation things you are doing.

Mrs. Grier: But does that presuppose that you have decided demand management is the route you want to go?

Mr. Litchfield: No. Do you remember when we talked about figure 2 on page—it would be page 12, if there was one; it would be 12c—the loop between the conservation supply functions and the load forecasts? That is what this paragraph is trying to describe, that there is a real opportunity for inconsistencies between the way conservation is treated in the load forecasting and in the supply function assessment. You have to be careful to make sure it is treated consistently in both cases. It does not mean that all conservation should be treated as demand; that is not what we are discussing here. It would be treated in the loads.

We keep all of our conservation assessment as if it was a supply alternative, treating it just like other supply alternatives, up until the point at which it is acquired. Once you have it, it ultimately results as a load reduction. It ultimately has to show up as a change in your loads over time, but until that has been accomplished, we keep it separate and keep it in front of us.

The other important concept in this paragraph is that the amount of conservation that is achievable is very much a function of the kind of future load growth that you see in your region. If Ontario experiences a very booming economy and that booming economy builds a lot of new homes to support the new people who are moving into the economy to take the new jobs and those homes are built inefficiently, then you have a very large opportunity for saving a lot of energy.

On the other hand, in a low-load scenario, where it is sort of doom and gloom and there is not much economic growth, there is very little opportunity for new conservation to be acquired and it would save substantially less.

That relationship is not reflected in what we have reviewed so far, and it is an important relationship, because it recognizes that certain kinds of conservation automatically schedule themselves or automatically adapt to the load growth that you see materializing. For example, a new building standard is going for ever to narrow the range of load growth. It will pull the high down a lot and it will change the low very little. That kind of an effect is a very positive effect. It is positively correlated with the load uncertainty you have and it makes the job of energy planning easier.

Mrs. Sullivan: I wonder if from time to time conservation methods do not actually increase the demand for load. For example, if over the longer term a consumer sees a potential house that will cost less to heat and light than one that is not using efficient techniques, that person may choose to use electricity rather than natural gas, oil or another fuel. In terms of not double-counting, it seems to me you still have to take account of an additional increase in demand that is based on what the consumer perceives as a cost saving over the longer term.

Mr. Litchfield: That is exactly right. That is one of the reasons that this paragraph you pointed to is important. By looking at the effects of a conservation program through the load forecasting system, you can at least get estimates of the amount of what we call fuel switching that might go on.

For example, if we offered a program that was so attractive to have an energy-efficient, all-electric home that we caused all the gas heat to go to electricity, we probably would not find that to be a cost-effective program; whereas on a house-by-house basis, looking at just the supply function—it is less than five or six cents a kilowatt-hour—it looks fine. That is an important attribute that you would not see until you took your programs or your approaches to acquiring that conservation and tried to assess what they are going to do to fuel choice, to the utilization of the energy source itself.

Another effect in industry is very typical. If you improve their efficiency a lot, they might substantially increase their output, because they are more competitive and they have a bigger market; so you build load instead of conserving load. That effect is there, it is possible, and that is why you have to be careful with how you plan for conservation and how you implement it.

Ms. Hamrin: I think this gets back to a major point and to Mrs. Sullivan's question on the role of government. Ontario Hydro is an instrument of government, and electricity is not what it is that we are trying to do, nor is it what we should be measuring. We are trying to get warm water for showers, an environment that is cooler in the summer and warmer in the winter, the ability to turn out certain products and a variety of different things. Electricity should be a way of obtaining some of those.

Your evaluation from the viewpoint of government is whether this is being done as efficiently as possible. If you are more efficient in the way you heat water or in the fuel you use for water, you may have more electricity available to do

other things for which there is not a good substitute.

In this whole planning process, the reason that electric utilities tend to be associated with government or regulated by government is that you are trying to provide your citizens with these comforts and services and things they need in the most effective fashion. That is why, when we waste a lot of power in one sector, it is not so much the total amount that is being generated; it is whether there are not other areas where citizens would rather have that power or rather spend that money than the one where they are currently spending it. Those are things that the electric utility does not necessarily have a reason for caring about. It is sort of turning out electricity and providing the services, but government has the broader perspective of trying to balance those and seeing if there is not a better way of providing its citizens with those services.

Mr. Beigie: Might I just say that from a power-planning model, from a basic econometric model, this interrelationship between conservation measures and a positive demand feedback is quite simply put into place. There is a tendency to make this a little overly complicated in relation. In fact, I would be surprised if that kind of feedback is not in many of the models that Ontario Hydro uses.

Mr. Brooks: I just might point out that on page 23 of our report, at the beginning of chapter 5, in describing what we mean by demand options, we do make the statement that in this discussion they do not include measures that would increase the use of electricity. In other words, we are not proposing that Hydro have a role which would see it making decisions in regard to overall energy conservation, decisions of the sort that would mean that on its own it would, you might say, attack other energy sources that could see large increases in the use of electricity. We say we do see a role for government in deciding the types of energy sources that are best for a given province. I am sure you are aware that other provinces have seen that as a decision area for government and that is what has been done.

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Mr. McGuigan: I am very interested in this matter of building codes and standards. If I can just use the apartment I have here in Toronto, it is about 10 years old. Three rooms, the living room and the two bedrooms, have glass the entire wall. Also, they open.

This summer we could never get the temperature down below 80 degrees, even though it has

an air-conditioning system. The tipoff was that the hallways are quite cool when you step into the hallways. These windows face east, so in summertime they are getting the benefit of a greenhouse effect in the apartment.

We contacted the building supervisors and so on and they inspected it all and made some slight adjustments which did not have any effect whatsoever. Then they sent a paper along a while ago advising all of us to stop trying to cool the outdoors, which points out to me that without some really draconian measures, how are you ever going to control that? You would have to have an edict that says, "You all put in heavy drapes." As an individual confronted with this, I might say, "Well, why should I put in a heavy drape when I know no one else is going to put in a heavy drape?" The misunderstanding that there is with air-conditioning and so on is that people say, "I want fresh air and I'm going to have fresh air, even if it wrecks the whole building."

It is an area that I see as almost insoluble. Hydro has looked at it and has walked away from it, largely because it is such a political mess. If you say to everybody, "There is no retrofitting, but you have to build to these standards from now on," you put a terrible capital cost on that new facility as compared to the old facility, and yet over the long run the people in the old facility are paying over the lifetime a terrible increased price to have both heating and cooling.

Incidentally, these same people get shafted on taxes something awful, because the taxes do not show. They do not know how much municipal taxes they are paying, whereas the person in a household knows what his taxes are. Taxes on the heating and the cooling are all hidden in that rental. They are going to hate their landlord because he is gouging them, but under the democratic system we have, I feel that is almost insoluble to attack.

Ms. Hamrin: I think we have had quite good luck with building standards in multifamily housing as well as residential housing in California, and though the initial response by builders was that it would drive them out of business—a lot of wailing and moaning—when it was all done, we found it was a selling point for people to move into the facility.

It is difficult to draft the standards and it takes a lot of work so that you have standards that allow design flexibility that are not mandating a little square box and that still do the job in energy efficiency, but I think it is possible to do. The paybacks are enormous because, of course, there is no reason the builders have any incentive to

make a place energy efficient since they will never have to pay the utility bills. Their incentive is to build the cheapest possible so that they can sell and make a profit.

It is a place where I think government has a legitimate role to play, as long as it can do it in a way that is not too restrictive. We have also found it does not necessarily have to raise the initial cost that much, but it does require rethinking. Most of us like to do things the way we have always done them, rather than starting over with designs.

Mr. McGuigan: You are obviously hoping.

Ms. Hamrin: I think there is that.

Mr. Chairman: If there are no further questions, why do we not move to chapter 6, "Generation Options." Perhaps again, Mr. Brooks, if the panel could summarize for us the recommendations, then we will have questions for clarification of other matters that come up from the committee.

Mr. Brooks: I suppose the most prominent recommendation in this chapter is recommendation 15 on page 35, which recommends that the government "initiate and obtain the results of an independent...review of Candu nuclear costs in Ontario." I do not think we need dwell on that, or perhaps we should dwell on it, given that my understanding is the minister has already announced it is the government's intention to initiate such an inquiry. I believe he has so indicated to this committee.

Mr. Chairman: Yes, he has, so perhaps it is worth while just dealing with the other recommendations in the chapter.

Mr. Brooks: We do have associated with that recommendation an appendix which discusses some things that led us to make that recommendation. I will not dwell on it further unless there are questions.

I think recommendation 16 is quite important. It deals with the need for sort of a different approach to independent generation. The panel has the feeling that given a somewhat different approach than we understand Hydro's to be at the moment, the potential in independent generation is perhaps more than might at this time be foreseen.

Then also, and this has been touched on already in another context, recommendation 17 talks about the desirability of short lead time, smaller developments; in other words, a balancing off of the economies of scale presented by very large generating sources like nuclear units or major thermo units of any type against the

advantages of smaller packages of conventional supply, which of course do have much shorter lead times, and in some cases, perhaps in most, higher capital costs. But there is a balancing there as the panel sees it, as indicated in our report.

We know Hydro is aware of that but what we are really saying is that we think there ought to be some additional emphasis on that, given this very large uncertainty as to the magnitude of future requirements.

Mr. Charlton: We have had a fair bit of discussion with Hydro over the last couple of sets of hearings around the question of buyback rates in terms of its relationship with parallel generators. Your recommendation 16 deals directly with that question. Can you tell us a little more about what you found in the way Hydro was operating with independent generators that led to the kind of recommendations you have made here?

1450

Ms. Hamrin: If you say, "I will negotiate a price around two cents with people with whom I choose to negotiate," that is not going to provide you with much information. When we talk about conservation and demand reduction—we talked about setting supply functions for those—one of the things you do not have is good data and information on what would otherwise be called supply functions for independent generation: what independent generation is available, which technologies are available, how much would be available under what price ranges.

We are trying to recommend a program that would give you a better basis of information so that Hydro could do better estimates in the future of what the supply options might be from different technologies and independent generation under different price scenarios, one that would start a development of the industry so that you could have those options available, as many of the technologies and projects we are talking about are the short-lead-time type of projects that can also be in staged development. They lend themselves well to situations where you have great uncertainty in the future.

It is interesting that Hydro recommended a very specific, and in my opinion, highly controlled program in this area when it is one about which they admit they have had little, if any, experience. What we recommend is to give them more experience. We are not recommending that you automatically go to very high buyback rates and see who all rushes in the door and take everything no matter what, but one that will start to give you more information of what is out there

so that if you need to tap into those resources, you are better able to know what the resources are.

Again, it is not eliminating options before you know what they are. If you say we have the potential for 300 or 500 megawatts, maximum, of independent generation, then you start looking every place else for the rest that you need. but if in fact you had the potential for 3,000, you might do things differently. If you only set standard buyback rates for five megawatts or under, you may be missing a very good segment, particularly of the industrial sector, which may be able to provide electric generation in increments larger than five megawatts.

Without opening the gates entirely to anything and everything, but at least getting an opportunity to know what more is out there, we are suggesting a more open program than Hydro has initially proposed.

Mr. Charlton: I think I understand all of that. Something in what you just said raises the next part of the question. You said you were not recommending that you automatically go to the very high buyback rates and then take everything that is available. On the other hand, you are also saying you want a more open program so you do not miss a whole lot of potential. How specifically do we approach the question of a standard buyback price at the stage we are at now? What kind of level should we be looking at to create a program that has the openness to really give us a good view of what the base potential is in this province?

Ms. Hamrin: Let me get to that last, but work up the list, because one of the issues is that when you go out and ask, "Who's available to do independent generation?" no one comes forward or very few come forward or very few can finance. Why not? Is it because the technology is not there? Is it because the price is not there? Is it because there are so many uncertainties in the contract that the bank will not finance it? Is it because there are so many uncertainties in what the buyback rate will be or in the interconnection requirements that nobody can figure out exactly what his costs will be?

The first thing I would do is have a program that is very specific on what costs will be, on what interconnection requirements will be, so that you can estimate exactly what those will cost, what any rates will be for backup power and maintenance power if you are a cogeneration unit. Standard contracts that say under what circumstances you will be paid or will not be paid and what would happen in the case of default of a

project would cover all of those things so that you can narrow them down.

If we look at the supply plan or the resource plan, and within that it looks as though you want to add some resources that, say, for environmental reasons, are not nuclear and are not coal, what are the other options you would have and what would the price be at which those were available? You might set that price; maybe it is 4.5 cents, 5.5 cents or 6 cents. Then you could see what came in. The response you would get would be based on the price, or at least you would have narrowed down what the response was, and not necessarily on a number of other issues that have been left open-ended so that, therefore, the industry has not responded.

Similarly, if the price is four cents or five cents, whether it is a five-megawatt project or a 50-megawatt project, I think you would like to know whether there are big projects available or only small projects. I think you want to be able to get that kind of information and have some idea what it is industry is responding to and whether you will have an industry. That is where I would start, by making sure you have got rid of a lot of the uncertainties so that the business sector knows what it is trying to do. Then we would decide that we want a certain amount of capacity, that we would like to see if we can get 200 megawatts of power at five cents a kilowatt-hour or six cents a kilowatt-hour and see what turns up within that.

Mr. Charlton: The last part of the question around this issue is this: I know there have been some experiences elsewhere. This recommendation basically says that Ontario Hydro should develop. How successful have utilities been at effectively complying with what you are recommending here, or should it be done by government and Hydro then directed to comply with a program?

Ms. Hamrin: As you might see from the agenda, I will be back tomorrow to present some more information on what has happened in the United States, on how programs have worked and not worked, so we can get into more detail on why these recommendations are here.

What we recommended was that there be some public review and regulatory approval of the program. There is an inherent conflict. You are trying to change the way utilities have always done things. In the conservation area as well as with independent power, utilities have all thought about building power plants and more power plants, and that that was their job. All of a sudden you, being government, are suggesting

that, one, they might look at reducing demand instead of just adding supply and that, two, they might look at getting some of the supply from independents instead of doing it all themselves.

There has to be internal resistance to that, just because it is not the way it has always been done. There is a sort of a natural conflict that comes in there when you first start. I think it is justified to have some process for public review which, if that is decided to be a good thing for Ontario Hydro to do, ensures that it is really doing it and is not doing a program that is designed to fail. It is just that easy. You can do it in conservation or you can do it in independent power production. You can say, "This is what we are going to do," and then design something that ends up not working. Then you say, "See, I told you nobody would show up," or, "I told you those conservation measures would be too expensive."

I think the purpose, and what all of us want, is to get a real idea of what is out there, of what is cost-effective and makes sense for Ontario and what does not, not designing programs to suit some other political purpose. Our recommendation does include the recommendation for public review. I think Ontario Hydro can develop and submit something, but I am sure there are a number of people within Ontario who have opinions on how that might be refined or what would encourage them to participate more.

Mr. Runciman: I was interested in a couple of the specific comments in this chapter, under "Purchases" on page 39. The last sentence says, "Even purchases of larger blocks of several thousand megawatts seem proper to evaluate in system planning as alternatives." I guess the feeling we have had from Hydro—at least certainly the conclusion I drew when we are talking about large-scale purchases from Manitoba or Quebec—was that it simply was not going to occur. I am just wondering if you could elaborate on what your conclusions are with respect to this and the feeling you may have had with respect to Hydro's position in terms of the ongoing negotiations.

1500

Mr. Brooks: Basically, Mr. Runciman, what that is saying is that as a potential source to meet future needs, one should not overlook anything that has reasonable possibilities of being useful. Therefore, we say that these larger blocks seem proper to evaluate. In other words, we would not think they ought to be ruled out on the basis of some preconceived opinion that it would not be a good thing to do. Indeed, from the material we have seen, that appears to be Hydro's position,

that it has continued negotiations to see what the cost of power purchased from Quebec, Manitoba or whatever might be and how it would compare with other alternatives. Again, you would go back to the diagram on power system planning where you are evaluating your options, and these are options now.

Mr. Runciman: But did you come away from that with a sense that Ontario Hydro was really committed in this direction, or that in essence it is doing it for a variety of other reasons and that really it is unlikely to happen because of that feeling within Hydro? These are some of the comments we have had in terms of increasing dependence on outside sources and those sorts of things.

Mr. Brooks: We are aware that a variety of factors come into the evaluation of this as an option. In other words, there might be a concern over large blocks of power being purchased from outside the province. Of course, there are concerns about the natural gas that is used in Ontario coming from outside the province, or the oil or whatever. These are factors we understand and would agree you would factor into your evaluation. We simply are not privy to information that would lead us to pass sentence on these as options. Of course, that was not our mandate anyway. We are simply saying that we agree with what we understand Hydro's position to be, that these ought to be weighed and assessed as options like a number of others.

Mr. Runciman: I may have missed this in your opening comments or in other testimony, not being here this morning. Just reading this chapter and what seems to be its underlying tone, you talk about nuclear costing, independent generation and purchases, that there is something—again, I am inferring this—of a built-in bias against some of the options in respect to the promotion of the nuclear option. When you read the article and the comments of Mr. Litchfield with respect to decisions made in the public interest, certainly something can be read into that. If you did comment on that this morning, I will read Hansard, but if you did not have an opportunity to comment on it, I would certainly appreciate hearing your views now.

Mr. Brooks: I do not think we commented on it in the sense you have just raised it. I have not read the article to which you refer, but Jim Litchfield here can respond to that. I would like to emphasize that what we are saying in a variety of different ways is that it is extremely important, and I am sure Hydro would agree with this, to compare all options on the basis of an equal

footing—what Jim did refer to this morning as a level playing field, to use an expression that has been used south of the border, not always with a good connotation, I might say.

We are simply saying that you must recognize all of the factors when assessing options and making decisions. Some are clearly quantifiable costs, some are not so easy to quantify and some are impossible to quantify. None the less, you take those or you try to take all the factors into consideration in making evaluations and coming to decisions. So anywhere the panel felt it did not have enough information before it to come to a conclusion on assessments of options, it said so.

I will leave it at that, and maybe Jim would like to elaborate.

Mr. Litchfield: I would be happy to, but I am not quite sure what you are pointing to in the article that caught your eye. I do not know exactly what was said or was not said when you were talking to the newspaper reporters. It is hard to document everything, and I am not sure what context that is out of, but that quote does not say anything about nuclear. As I remember the context, and I could be wrong, we were talking about the hydrocarbon energy resources program applications in the US and whether there was a need for a regulatory oversight of avoided costs and standard purchase prices, standard offers.

In our review, the questions on Candu costs were primarily based on experience and we did not have any experience in the design, development or construction of Candu reactors, so it is largely ignorance. But it was clearly an option that could potentially play a very major role, that already plays a very major role and could play an even more major role, especially if something like the high load growth case develops.

This morning we were talking about the range of uncertainty. I am sorry you were not here to catch that, but if you look at the range from low to high load growth—this discussion is on pages 20 and 21 of our report—there are approximately 30 Candu reactors between the low load forecast and the high load forecast that Ontario Hydro has planned for. There is a tremendous need for new resources in that range.

If the costs that are currently stated by Ontario Hydro are correct, they are substantially below the costs of other nuclear technologies, in the United States at least, and around the world. The panel's recommendation was purely that it is such an important piece of this overall planning puzzle that it certainly deserves some careful attention, and if the costs are valid, an indepen-

dent corroboration of that would be very beneficial to moving forward.

Mr. Runciman: I appreciate that. What I was getting at—

Mr. Beigie: I would like to say briefly that quite the contrary to a bias against anything, we wanted to ensure that there was not an intentional or unintentional bias in favour of something that has that vital a role to play in the future of the supply options.

Mr. Runciman: I appreciate that. What I was getting at was that I detected a tone, especially in this chapter, that you had identified a bias in terms of the approach Hydro had taken, not only to nuclear but also to the variety of other options. I wondered if you wanted to comment on that or if I was correct in my conclusion.

Ms. Hamrin: I think if there is a bias in the other non-nuclear items, it is, at least in our experience, a tendency for electric utilities to want to keep control and to be suspicious of anything over which they do not have direct control. When you start moving into the area of demand management, independent generation and purchases from other utilities, those are things where the host utility is not in direct control. There is a tendency for them to want to move away from that, at least in the experience we have had in other areas. We want to make sure that those other options are kept in and evaluated evenly, because they may be as economic as, or more economic than, some over which the utility has absolute control.

1510

Mr. Chairman: Any further questions? Then maybe we can move on to chapter 7. I suspect we have already discussed a little bit of this somehow throughout the day: "The Analysis of Alternatives: Risk and Cost." Mr. Brooks, could we get some explanation of the recommendations, perhaps figure 5 and some of the factors that led up to these recommendations?

Mr. Brooks: George is going to give you a bit of an expanded explanation of figure 5, which I think probably is rather important at the outset.

Mr. Govier: If we look at figure 5, first of all, it is all illustrative. I should emphasize that. The part on the upper left illustrates the growth in electric load over a 20-year period, showing a low and a high forecast. Just for illustration, we assumed that the probability of the actual growth falling between those two lines would be the same 60 per cent that Hydro has indicated.

If we then take the situation at the end of that 20-year period, in the year 2000, we can depict

the range of uncertainty by the figure on the right-hand side, where we show on the horizontal axis the probability going from zero to 100. There is a shaded curve called the cumulative probability. What this really says is that there is a 100 per cent probability that the electric load is going to be more than zero. There is no question of that. It also says that there is zero probability that the electric load is going to be above the top of this diagram, where you see the shaded curve blending in with the vertical line.

The shaded curve is really an estimated curve showing that there is about a 20 per cent probability that the electric load will not exceed the high forecast in the year 2007. That is the black dot that is at the same height as the high-forecast curve in the year 2007. Similarly—we have assumed this would be more or less symmetrical—there is about an 80 per cent probability that the electric load is going to be above the low forecast in the year 2007. That is the second black dot.

The purpose of all this is to permit the choice of energy sources to be made in the light of the probability of the load exceeding the amount of energy that would be supplied by an individual source. You will note that at the bottom of this upper right-hand diagram we show a large black rectangle. That indicates a long lead time, presumably a low-cost but long-term source of supply being fitted into the picture, because the probability of the load exceeding that is very great.

Above that, we have stacked the next source of supply. I repeat that this is illustrative. The next source of supply, going up to the 80 per cent probability, would also be a source with long lead time, large capacity, not much flexibility but low unit cost. The different sources, which would include demand management as an alternative source, would be stacked, scheduled, if you like, or planned with regard to the probability of their being required.

This is an alternative to planning on the basis of a single-line forecast—a most-probable forecast, if you like—with contingencies to handle the situation if the reality is above or the reality is below. Here, in this so-called probability method of planning, the flexibility is maintained by employing shorter-lead-time, smaller units, to meet the upper end of the potential low growth.

I do not know whether that helps.

Mr. Dietsch: That should add to the total confusion.

Mrs. Grier: Can I express my confusion? Is that what Hydro does now? If not, how does it differ?

Mr. Brooks: I was going to say that what Mr. Govier has just explained embodies a philosophy of approach which the panel, based on the information which it had time to acquire from Hydro, felt was different or at least embodied a different philosophy of approach from Hydro's approach. It is not easy to explain or grasp what that difference is, but it does relate to recommendation 18 at the bottom of page 42. After Mr. Govier is finished, I thought Mr. Litchfield might have a crack at it too.

Mr. Chairman: Perhaps, Mrs. Grier, we could let Mr. Litchfield have a crack at it.

Mrs. Grier: I am quite sure Hydro will come back with its version at some later stage and then I will understand.

Mr. Govier: My understanding of Hydro's approach, based on the documents we received, is that it arrives at an official load forecast, single line, and then it plans for that situation. But, at the same time, they recognize that the growth may be less, so they have contingency plans if it is less; and they recognize the growth may be more, and so on.

In a sense, you can say that both are aimed at the same objective of trying to get the supply, including any demand management, to match the realities. What we are saying is that we think an approach that recognizes more specifically the probability of the growth being this or that would be more helpful and more flexible. There would be less chance of making errors because large, long-lead-time facilities were committed in the face of perhaps quite high uncertainties. Mr. Litchfield can add to this.

Mr. Litchfield: I thought that was very clear. I am not sure I can help.

Ms. Hamrin: You were asked this morning a question that had to do with heading towards that railroad track. It may be an example here of how this differs from the suggestion that was given.

1520

Mr. Litchfield: Yes. Anybody who followed the railroad example—this is not what Hydro is doing; this is what our sense of a better match to the conditions that Hydro is forecasting would be. The forecast on the left is meant to be a rendition of what they told us, that they have a high and a low and a 60 per cent probability of being between the two. The cumulative probability distribution here, as Mr. Govier described it, is only a statement of what is underlying an estimate of 60 per cent probability of being between their high and low. It just tells you that

the chances of getting a load of that amount are greater.

The only concept here is that if you have the situation—and I think this is an accurate rendition of reality as best we know it—there is some distribution of possible load growth; some amount of load growth at the low end is very likely. It is very likely that you are going to have today's loads 20 years from now. In most systems, it is hard to get scenarios that actually cause negative real growth in load. So some amount of load growth is very likely. To meet needs in that range, you just go for the cheapest resource you can find. You do not really care about its lead time or its size, as long as it is low-cost. You go for the lowest cost thing first.

In Ontario's planning, that would be Candus because they are very low-cost relative to the other options that have been evaluated and they are quite long-lead-time and quite large-plant-size. But for high probability load growth, you just minimize the expected cost of energy off of the resource. Up at the upper end here, you are planning for extremely risky load growth. It has a very low probability of occurring. So it is very hard to get loads at the high or higher.

If you plan to meet those loads with a long-lead-time, large resource, you are going to be wrong most of the time and regret it. If you plan to meet those loads with a short-lead-time resource, no matter what it costs—it may be a really expensive resource but a short lead time—in most cases, you will never build it. It was only there as a planning placeholder, emergency backup if you will, but the odds are you do not need it.

What this diagram illustrates is that the choice of resources is really not just their expected cost or, in Hydro's terminology, the standard cost; it is much more than that. It is the expected need of the resource times its expected cost, and that probability weighting gives you a niche for every resource. You have some resources that are just there to manage risk and uncertainty and others that are there to get you the cheapest resource they know how, first and foremost.

This concept is one we were trying to get across and the recommendation was to expand. Some of the models that Hydro is using or experimenting with deal with this concept, but the application needs to be expanded.

Ms. Hamrin: I think the main point of this chapter is that in the whole Ontario report the word "risk" did not appear. We feel that managing risk, managing that uncertainty is at least as important as some of the other things that

are going to be done, whole chapters just dealing with how to plan for a future that is highly uncertain, how to plan in this time and balance the risks so that you do not get caught making huge capital investments that are not needed or not making any investments and then finding that you desperately need something and the cost is way too much. That is what this is all about.

Mrs. Sullivan: I must say that I really thought from the presentations we have had from Hydro that this was indeed the kind of planning process that it went through. The need was measured, there was a probability of achieving that need, and various actions in various combinations, thousands and thousands of permutations and combinations, were indeed measured, including in areas not only of cost-effectiveness but also of environmental impact and many of the other strategy elements that were included all through that document. So I am not so sure that the advisory panel and Hydro, from what we have heard, are very much at odds here.

One of the things I am interested in is a quiet little sentence here that says, "At the highest levels of uncertainty, low-risk alternatives such as independent generation are attractive." Is there a conundrum or am I just reading this wrong, that indeed, independent generation only becomes a viable option in terms of probability planning as you are moving quite a way down the line and when you are actually seeing low growth occur?

If that is the case with what I see as an emerging industry, how can we be recommending and encouraging Ontario Hydro to encourage alternative, parallel or private generation in quite a risky scenario in terms of financial commitments that are necessary for new firms that are coming into this area, when indeed the probability of the need for its use really quite shrinks? You have that area into the less than 20 per cent category.

Mr. Litchfield: What we left out of that paragraph, unfortunately, was that there was an implicit sense of cost-effectiveness there. Independent power producers are extremely low-cost and very cost-competitive even at the high probability end, and they have flexibility too: their short lead time and they come in very small increments. You need to start developing that industry on that base.

What we were implying here, I think, was that in the higher load scenarios, if you have that industrial base established, if you have an independent power-producing industry, you can get a lot more out of that industry by simply

raising the amount of the standard offer, the price you are willing to pay. At the upper end here, you can respond fairly quickly by a policy tool, raising the price and paying more for it. On a short-term basis you can get a lot more energy.

Mrs. Sullivan: You are assuming, however, a mature industry, which we do not have.

Mr. Litchfield: Yes, you would need that or you would have some very long lead times to start it up.

Mr. Charlton: Before we go on, could you just clarify that? I think what was being said there is that we do not have an industry, but what you are getting into in terms of the low-growth scenario is that you develop the industry which is cost-effective in the early part of the low-growth period you are looking at. It is only when you get to the end of the 20-year low-growth period you are looking at that you have to go after the very short-term high cost. Inherent in the process is the development of that base industry. Is that not what you are in effect saying?

Mr. Litchfield: Yes, that is correct.

Mr. Charlton: So we should not be writing it off because the industry does not exist now.

Mr. Beigie: One of the things we talked about but did not get into in any real detail in the report is the question of the playing field for the independent generators versus Hydro; I do not mean to put this in a confrontational sense. Questions about the cost of capital to the independent generator, how much that is relative to the cost of capital to Ontario Hydro, tax considerations and so on would be likely to bias the extent to which an independent generator could submit—from the standpoint of Ontario Hydro rather than from the standpoint of the national interest—a competitive bid, which is one of the reasons, in our opinion, we do not have an industry, the independent generation industry, that is as well developed.

This is a technical panel, but again from the standpoint of an industrialist or an economist, the point is that there is a consideration about just how level the playing field is for decision-making purposes when you have this kind of bias in the system.

Ms. Hamrin: One answer of how we differ from Ontario Hydro is that my understanding is that Ontario Hydro is building to a line that would be sort of halfway between the low and high forecasts. If they propose to build long-lead-time resources and large-size resources to this, that black square then would be coming all the way up

here. If it were wrong, there is a very large commitment that is difficult to reverse.

Instead, we are building the blocks up from the bottom. We are not starting in the middle and trying to adjust either way depending upon how things go. We are building from the bottom putting the long-lead-time, large-unit resources there and then adding the other ones on top. With regard to independent generation, I agree with all the comments that have been made. There are some that can come in and are very low-cost, and have short lead times and smaller sizes, down low; there are some that get more expensive.

1530

One of the things I would suggest, and we may talk about it tomorrow, is that you can actually put out options to industrial plants. When somebody is putting in a new boiler, that is the time he considers cogeneration. Maybe you are not sure you need that power right then, but you can purchase the option as you can purchase an insurance policy.

If it looks as though your load is going to that higher level, you invoke the option. They build the plant and you purchase the power at some previously agreed upon level. It may not be cost-effective to purchase it right here and it may be cost-effective to purchase it here. But if you are only planning long-lead-time, large-power plants, there is no room for those other kinds of options to fit in. You have limited your flexibility and ability to move if your load is not going the way your forecast had thought.

Mr. Passmore: Perhaps I am going to add to the obfuscation rather than the clarification, but I think maybe some of the problem that arises from this figure 5 is that it would appear when you look at that bottom group of bars and you see the arrow going down and it says, "Increasing size, longer lead time, higher capital costs," that perhaps the confusion is that in the solid black bar only those types of projects are appealing and viable.

Of course, that is not what that is saying at all. What it is saying is that only high-capital-cost, longer-lead-time, increasing-size projects are appealing in that bar, but that demand management and parallel generation options are appealing throughout the entire gradation of that series of changing black to grey. Is that correct?

Ms. Hamrin: I think that is correct. I think the point, and we maybe made it backwards a little bit, is that one might get the impression when we are talking about risk management and how you would analyse the alternatives that you only do very short-lead-time, small projects. We recommend doing those from the start. There is a place

for the larger plants and the longer-lead-time plants, but that is in the high-probability area only. You do not put those in the areas with low probability where you are ever going to need that because it limits your flexibility.

We had assumed that you did the other things all through, but we are trying to make sure that we show there is a place for the other kinds of plants. It is just where it is that there is a difference of opinion.

Mr. Litchfield: The attribute that is left off this chart is cost-effectiveness. If all of these resources, all shades of grey and black, all cost the same amount, then the arrows are right. If they all are exactly 30 mills, then you take the long-lead ones and you put them at the bottom and take the short-lead ones and the small sizes and put them at the top. That was the dimension that is not described here and is very important. It is the combination of both aspects, both the expected cost or cost-effectiveness of a resource and its flexibility that make it attractive.

For independent power production and for demand-side management conservation, they have a great deal of flexibility. They are small and they are relatively short-lead-time, given that you have done some preparass in the one picture and probably should not have tried that hard.

Mr. Brooks: I probably sound like a broken record, but on this point about the diagram, which certainly has shortcomings but, again, addresses the point of public discussion and consideration of a variety of important aspects of power system planning and selecting options, in our view it helps to have a diagram or something like this as a basis for discussion, even though it may not be understandable to all people. In other words, it is better than a blank piece of paper, we hope.

Mr. McGuigan: I wonder if the economist, Mr. Beigie, could expand a little more on this difference between Hydro and private industry, as the taxes affect them. It is certainly not very clear in my mind. I guess all we really know is that Hydro does not pay any taxes. Private businesses do, but then they can write part of them off against the income. What is the net effect of that?

Mr. Beigie: Again, it depends on who is making the decision. If you are looking at the question of internal costs versus external costs, external costs include the full opportunity costs of capital—the alternatives of finding money—whereas the internal costs include principally a debt form of capital cost, as opposed to debt and equity. Also, an external supplier is responsible

for paying certain taxes, whereas the internal cost does not include many of those taxes. Then the external cost is going to look much more expensive than an internal cost, even though, from a societal standpoint, the external cost could actually be less than the internal cost to the decision-maker. What you have done is, through the institutional system, bias the results. Again, our recommendation—I have forgotten the number on this.

Ms. Hamrin: Recommendation 19.

Mr. Beigie: Is it 19? What we suggest is that, in effect, there has to be, as much as possible, a level playing field for the society's best decision-making in this particular area.

Let me give you a very concrete example. If our car industry is competing with a car industry in a centrally planned economy and that car industry is supplying imports into our country and does not have to pay, for example, labour costs, it would have a definite bias in favour of the consumer purchasing those cars rather than the domestic car, even though from the world standpoint it would be inappropriate to say that those are really cheaper cars, if I am accurate on that.

Mr. McGuigan: You are saying it is biased in favour of purchasing from Hydro.

Mr. Beigie: Yes. Again, there is nothing ulterior or anything like that about this. It is just that the decision-making framework encourages this kind of result. Unless you take that explicitly into account, then it is going to be the case that the external supplier is going to have to do much better in an efficiency sense in order to have an equal chance of getting the contract. Essentially, what we are saying is, "Look, these are institutional considerations that really go beyond what we had time to look at in great detail." As many of you are well aware, in Canada generally it is one of the really major issues about how private sector and public sector companies can compete fairly in these kinds of environments. That is really what we are getting at.

Ms. Hamrin: And it is very much, getting back to earlier questions, a governmental type of decision on how money is distributed, whether you have an industry that does not pay taxes and therefore produces power at a lower level or whether you would have other goals, which were that you prefer private sector development and therefore you might give some of those tax benefits to the private sector rather than the place they have traditionally gone.

This is only with regard to future things that would be done. We are not evaluating the sunk costs. Those were already done and those are gone. But for the future, to provide X megawatts of generation, you can use your resources in different ways. When they are used through the utility, you have to be aware that there are these other tax and equity issues that come into play that automatically make one go in that direction, unless they are made explicit and balanced against the other competing interests to determine if there is some reason why you would like to change development from one area to another. You may be able to do that with it not changing the cost to the taxpayer at all.

1540

Mr. McGuigan: A question to Ms. Hamrin: I think I understand this probability chart, but I am wondering if it applies to Ontario as equally as it might apply to, say, California because of the bias we have in Ontario regarding, as I mentioned before, our proximity to a very large US population, and our own large population—I guess we would have to include Quebec in this too; Quebec and Ontario—in comparison to the rest of Canada, where people deciding to make something or do something do not have as many choices in Canada as they do in the United States. I am just wondering if we have less risk in making moves here in Ontario than you would in almost any other place in North America.

Ms. Hamrin: I do not know that you have less risk or why you would have less risk. I do think you need to find out, to have better information and more options for moving, depending upon what that risk is.

If in fact you find out that you do not have these many risks, that it is pretty firm, you would not have as broad a band of uncertainty as you have here. The indications from Ontario Hydro's own data are that you have a very high risk. Given that, we are concerned with how you manage that. It would appear from Ontario Hydro's numbers that you have a greater level of risk and uncertainty in your generation planning than most US utilities. I am not sure—

Mr. McGuigan: That comes back to the fact you have based it on the Ontario Hydro—

Ms. Hamrin: That is right. Now, if through improved forecasting methods and other kinds of things they are able to find that in fact they do not have as great a risk, as they narrow that band, then they can move ahead accordingly. We are just saying, given the high level of uncertainty

that Ontario Hydro told us it has, this is the way we would recommend you manage that.

I think the more you know about the options you have that you can pull into play, particularly in case demand goes very high—because it has been my experience, as in one of the questions earlier, that the public in general does not want the electricity to go out. They want to make sure it is going to be there, and within certain price bounds; that is what they assume the utility is there to do.

You want to be sure you are not going to have too little, and that is always the concern of utility planners and the concern of government, but you want to know what it is going to cost you to make certain that you do have enough, even at the higher levels. That gets back to our previous recommendations, to give you more information so that you know what your options are and what they will cost.

Mr. Adams: Could one of you perhaps just describe to me what a mature independent generation sector might be like in Ontario, if we had one?

Ms. Hamrin: One, I think you would have more resource data on the actual resources that are available: how much wind resource there might be, certain wind regimes; how much small hydro at very small sizes—by very small I mean under 20-megawatt or 10-megawatt size—is available; what the options are for solar electric or the use of biomass fuels, waste products from agricultural processes. You would know what the technical potential is.

Two, you would have companies that have built projects. I would propose that they should be Canadian companies that have built projects and have experience, so they have at least some idea what their costs will be to generate a kilowatt-hour of electricity with various technologies.

Three, you would have technical experience and industrial experience. Industries are rather conservative in going into something new, just like everybody else, but if some industries have built cogeneration facilities, for instance, then there is the ability for others to see what works and to actually have experience with how they work, how operation and maintenance costs run. In addition, you would have experience within the banking and financial community in financing these things.

So if you all want to gear up the program, and instead of getting 200 megawatts want to get 2,000 megawatts, you would have equipment manufacturers there who can provide equipment;

you would have developers there who know how to develop the projects; you would have financial institutions which are not afraid of financing them, which have some experience in financing and are able to say, "I'll finance at this rate under these circumstances."

I think you have utility staff who have experience in contracts and how to do contracts, in what the issues are that are risky for utility and what the issues are that are not of concern. So you have got experience in all those areas, and possibly you also have some options actually purchased for future generation if it looks as though that is worth the insurance policy of doing.

Mr. Adams: In all of those things—some of them I think we have and some I think we do not—I can well see the things you mentioned. In other jurisdictions, what sorts of organizations move into those fields? I can well imagine the financial ones and the banks but what sort of groups? Is it something that very large companies take up as an extra or is it something that new companies appear for and run? What sort of experience do you have—

Mr. Chairman: Mr. Adams, I do not want to cut you off, but Ms. Hamrin is going to be here tomorrow to discuss independent generation. I do not know if it would be better to follow this. I do not want to cut it off, but we are—

Mr. Adams: Okay. Can I ask one more thing then? Early on when you were discussing that curve, you mentioned conservation as a way of, in a sense, generating power. Would such a mature industry you are describing include substantial conservation-oriented groups which were interested not so much in generating new—do you understand what I am saying?

Ms. Hamrin: Yes. I think it should, and our position in programs we have been involved in is that you do the most cost-effective conservation and then you look at what generation you need beyond that. Frequently the two are mixed, because if you are an industry and you are replacing your boiler and you are going to put in a cogeneration system, then you probably are looking at other ways to get your system more efficient because of the capital improvements you are making. They usually go hand in hand but, by all means, I think conservation is the major first step and then you look at the generation you need after that.

Mrs. Grier: I do not think we have had any comment today—and I do not think it is in your report—about Hydro's reserve margin and the

amount in reserve margin it feels it has to keep. I am wondering if you have a comment on that—maybe someone could direct me to it—or where you feel that fits in to this whole segment and chapter. Is it appropriate? Does it contribute to the broad width of the bands and to the degree of risk Hydro says it has?

Ms. Hamrin: I do not think we have said anything about it.

Mr. Brooks: I think you are correct that we do not have a comment about reserve margin in our report. The panel members may wish to comment on it, but here I assume they are speaking about the planning reserve as distinct from an operating reserve on a day-to-day basis. The planning reserve is in the Hydro strategy document which we had before us, so it was not a point that seemed to us to be particularly contentious. That is not to say that the subject generally is not contentious; it has been, and I guess will continue to be over time. From a panel standpoint, no, we have no particular cause to comment on it, but members may wish to, based on their own experience.

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Mr. Litchfield: Yes I would. I remember drafting some stuff on the reserve margin. I think it was one of those things that must have been cut up for space. I went looking for it. Suddenly I remember very explicitly what we did. I think it was the discussion of where reliability is paramount. One thing it is not is paramount.

As I remember, we looked at the studies. They were based on studies done in the late 1970s as to the balancing of the economic cost of addage with the expected cost of additional reserve margins. I do not remember the criterion exactly, but it is something like 24 system-minutes that came out of that. That is maintained for the entire 20-year planning horizon.

At least individually, personally, I think that is something that is worthy of some additional study and some thought, because as I am sure you are aware, it motivates a whole lot of action. It is a fixed percentage pretty much over the entire 20-year period.

There were earlier questions about the interrelationship of the Ontario economy with your neighbours. They have a lot to do with how much reserve margin you need to hold if you believe that through transmission, interconnections and the diversity that exists between you and your neighbours, you can get some substantial back-up. Then you can run much lower reserve margins.

I did not see much discussion in Ontario's report. It was something on which we did draft some material in an earlier draft than we finally concluded. I cannot say the panel concluded it, but we did talk about it a fair amount.

Ms. Hamrin: I think it is also related to diversity. If you have 60 per cent or 80 per cent of your generation coming from one technology with one plan and there is a fatal fall, a flaw found in that, you had better have the backup to follow it up. If you diversify a bit more and have greater diversity of resources and technologies doing the generation and some smaller unit size, then you do not need to carry such high reserve margins.

Mr. Chairman: Perhaps we can then move on to chapter 8, the public review and approval process. Mr. Brooks, could we get a brief explanation of the recommendation and the thoughts leading up to it, please?

Mr. Brooks: I have touched very briefly on that in my introductory comment. I would like to ask George Govier to expand on it now.

Mr. Govier: I am looking at page 47. I think the first thing the panel would wish to do is acknowledge the extensive efforts that Ontario Hydro has made over the past 15 years or more, in its public information programs. Having said that, we in the panel have some comments and some recommendations.

We believe there are three important deficiencies. The first of these is stated at the bottom of page 47. I will not read it out, but we consider it rather significant. Turning to page 48, there are two other deficiencies in our view. Having regard for these three deficiencies, we believe there would be great merit in there being an independent technical agency which could on a continual basis and in a public forum, in a public hearing, review both the plans and the specific applications of Ontario Hydro.

We think this would provide a very fine forum for public input if it were in open public hearing proceedings. We believe that such an independent, technically oriented body could be served by a competent staff which would be able to make detailed technical analyses of the planning process, the plans developed by Hydro. As a result of this, taking into account the views expressed by the public and other interested parties, this independent agency could approve plans of Hydro or approve them subject to certain conditions or, conceivably, disapprove them.

Where major matters were involved, we would presume that such approval or disapproval would be subject to the consent of the Lieutenant Governor in Council. In less substantial matters,

perhaps some minor transmission line addition or something of that sort, such an independent body might be given the authority to approve in its own right and not go beyond.

In a nutshell, we believe that there would be considerable merit in ensuring an independent, unbiased, open forum for public and competent technical review of the plans of Ontario Hydro on an ongoing basis; not as the chairman referred to earlier, a one-shot basis such as our group has been, but a continuing group that would become thoroughly familiar with the Hydro system and its problems.

Such a group, for example, would examine the load forecast curves developed; it would examine the costs developed; it would examine the process used whereby Hydro would compare its alternatives; it would examine the manner in which Hydro proposed to handle the assessment of risk and to manage that. We do not know and we have no recommendation about whether it should be a new agency or whether there is an existing agency whose mandate might be expanded to handle such an assignment.

Mr. Chairman: Are there any further comments from the panel? Are there any questions from the committee?

Mrs. Sullivan: I am very interested in this last recommendation. I am wondering if in fact your recommendation, which seems to me to make a lot of sense in terms of streamlining the process, would go beyond the technical analysis of the financial, fiscal forecasting recommendations or decisions of Ontario Hydro and into that next phase, when you are actually into the process of environmental assessments, transmission-line hearings and public input.

Do you see that as a legitimate function of that panel, or the stage that we are almost at now, being the end of that panel?

Mr. Govier: No, I think not. We think the function should include both.

Ms. Hamrin: Sometimes there are large debates at the environmental siting approval point, which really are about whether the facility should be done at all, that would more appropriately have come earlier in the long-range planning phase. If you had a body whose job it was to review and comment and be involved in long-range planning, much of what may now be debated in the environmental permitting might get taken care of earlier on, because the issue is really whether or not to go this way or that. It might simplify, from the environmental phase, strictly environmental issues and impacts, rather

than broader policy things which they frequently get into.

Mrs. Sullivan: Then the next question: My riding being subject to a consolidated hearing for the location of a dump, and knowing the frustration that process alone can bring, where do you see the citizen fitting into this kind of a process in terms of, for example, intervenor funding? Do you have any observations to make in those areas?

Mr. Govier: I am sorry. I missed part of what you said.

1600

Mrs. Sullivan: In intervenor funding, where does the citizen fit in? Where does the participation of the public fit into this kind of streamlined process?

Mr. Litchfield: I can speak from my experience in the northwest. I think this is one of the most important recommendations in here; it has the greatest potential for significantly modifying how things have been done historically and maybe fixing some of the problems. I see this recommendation as very similar to the enabling legislation for the council I work for. At least what Congress set up for us was a comprehensive assessment of all those things and a very strong public involvement mandate.

There were three primary mandates the council was given. The first was to develop an electric power plant for the region. The second was to develop a fish and wildlife program to try to compensate for a lot of impacts that our fish and wildlife resources have absorbed as a result of hydro power development. The third was to conduct the first two in an absolutely open public involvement program.

We have not done that with intervenor funding. We have done it with a great deal of involvement, a great deal of working with groups and individuals and companies, but we have not had to go to intervenor funding because we operate in a much less formal, not contested process, as I suspect your dump proposal was conducted in.

Mrs. Sullivan: Yes, the dump proposal was particularly difficult, but a transmission line is awfully difficult as well in terms of the community impact. Presumably this process would not stop with the creation of a generating plant; it would have to go right to the end of the line.

Mr. Litchfield: That is correct. I agree with what Ms. Hamrin said. A lot of heated debates which have occurred over siting, at least in our region, are really an argument over need and

cost-effectiveness which were not dealt with properly first. So the process is somewhat out of order and you use the only tool you have, and that is the siting councils. You go in there and try to prove that they are not needed, are not cost-effective and have huge environmental impacts.

We do not have a lot of experience with this but at least in some areas of the west where the case has been properly built and a consensus is formed, often times the environmental community recognizes that there are tradeoffs and there have to be some improvements made somewhere in the system. They are not all costless, but we can minimize the overall costs. Your chances of moving forward smoothly are greatly enhanced.

That is what Hydro's entire process is about. At least I personally think the formation of such an independent technical review panel could help to really facilitate that by establishing the groundwork in advance of the siting hearings, which are still going to be contested.

Ms. Hamrin: On the subject of intervenor funding, I think it depends upon how you structure it. You might look at the funds that covered the costs of this panel as a type of intervenor funding and you brought in experts in certain areas to give some advice. In California, which frequently does things in the most complicated way possible—I do not recommend that everybody do things exactly that way—we do have cases which are much more formal and require quite a bit of time and there is intervenor funding available for public groups that, first, make a significant contribution to the decision as determined by the judge in that decision; it is a more formalized process.

Then they can submit costs. There is a certain scale of the kinds of costs which would be accepted for reimbursement if they win their case or make a significant contribution to the winning side, the theory being that it saves the ratepayers and the taxpayers in the long term and it is cheaper to underwrite some of those costs. Particularly ratepayer groups, low-income housing groups, those kinds of groups do not have access to large amounts of money to intervene and can provide very important information.

Independent producers have not had access to intervenor funding in California because it was felt that the industry could afford to pay for the intervention itself. That is assuming there is an industry. I have been called into other states and had my time and expertise paid for by the department of consumer affairs or the Governor's office because there was no industry

developed in the state and there was no expertise in that particular area.

It partly depends upon how formal or informal the structure you decide upon is, but I think it is important that you are able to get input from a variety of public groups, and it may be that intervenor funding on some level, with restrictions so that it is not abused, is still an appropriate way to go.

Mr. Brooks: From a strictly Canadian standpoint, I would have to observe that this question of intervenor funding is one of the most debated items that has come along in recent years. At least one province has adopted a form of intervenor funding; that is, the funding of intervenors appearing before what amounts to a public utilities tribunal, as it is sometimes called. There is an organization in this country called CAMPUT, the Canadian Association of Members of Public Utility Tribunals, and there have been a number of discussions at meetings of that group about this question of intervenor funding.

I certainly would agree that it would be one of the major considerations that I would recommend would have to be debated by government in its consideration of whether or not to adopt something like we have recommended, and if so, what the mechanics would be.

I think the panel members probably knew enough about the subject to know that it would be unwise for us to make any recommendation in the area. We could very well consider that as going beyond our technically oriented mandate, but it is an extremely important subject.

It has been tried in at least one province and maybe in others that I am not aware of at the moment, but we certainly feel that, some way or other, there ought to be public input in this process that we recommend.

Mrs. Grier: Before I question, may I just say how much I appreciate that last exchange, because Hydro is now claiming costs against one of our intervenor groups, Energy Probe. Some provinces give it to the groups; others attempt to get it back.

I wanted to ask whether you saw the Ontario Energy Board as the agency in this province that would do this kind of review, or are you not familiar enough with the Ontario Energy Board to consider it as a specific possibility?

Mr. Brooks: I think the short answer is yes. We were not sure whether it was wise for us to go as far as suggesting an organization by name, but it obviously leaps to mind when we talk about establishing either a new one or changing the mandate of an existing one. The first one I am

sure you would think of in Ontario would be the Ontario Energy Board.

Mrs. Grier: Thank you.

Mr. McGuigan: There is quite a bit of background to this question, mostly to our very fine representatives from the United States. In Ontario, and I guess all over North America, people engaged in livestock production have had trouble with leaking voltage. It is certainly not something that is limited to Ontario, but there is a feeling among some of those people who have dealt with them that perhaps one of the reasons we in Ontario have some of the cheapest hydro in the world is that the livestock producers are bearing some of the costs. The suspicion is that it is a case of the foxes guarding the chicken yard.

In the United States, with your independent utilities that are owned by the public and so on, who guards the public in relation to setting down the regulations that hydro must meet in providing transmission corridors and even coming down to the individual installation in the home? Who provides what I hope is the independent guardianship in the United States, as compared to Ontario? I hope Ontario Hydro people here might correct any misconceptions that I have in this regard, but I think the conception in Ontario is that it does not have that independent group out there setting the standards. I wonder if you could comment on that.

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Ms. Hamrin: I think Mr. Litchfield and I can make comments, and they will be slightly different perspectives, which is what you would expect. Where we have investor-owned utilities in the United States, we have a regulatory body, a public utility commission or a public service commission in the state that oversees the utility. Because that body is responsible for setting rates and rates of return, it has a tremendous amount of influence and leverage over the utility and what it does or does not do. If you have a body that is in business to make money, as an investor-owned utility might be, and you control what money it makes, then you can have a lot of influence over what it is doing. That may or may not always be exercised, but in theory that is how it goes.

In practice it is complex, just as it is here, so the regulatory bodies vary in their effectiveness, depending on how large they are, how large a staff they have, how willing they are to get into the details of what goes on with the utility.

We also have a lot of municipal utilities and rural electric utilities in the United States, which are supposedly governed by a city council or a board that is elected by the citizens. In theory,

that group can carefully monitor what a utility is doing because it is located in the same community. Again, there is varying success, depending on how large the community is, how large the utility is, what the issues are.

My experience has been that very large municipal utilities, even though they have a governing board that is elected by the citizens, are frequently quite ineffective in monitoring what the utility is doing, primarily because of the level of complexity in all of these issues that we are dealing with, just as they were here. That is part of the reason that I feel strongly there is a need for ongoing technical expertise. Bringing in citizens, no matter how well intentioned, you are just dealing with a lot of very complicated issues and you need expertise. If a specific group can bring in its experts and argue with the experts from the utility, I think that can add to the quality of the debate, and I will talk about that a little more tomorrow. I think having people who are responsible to the citizens and whose interest is one of public policy and the public's good in general is important.

Mr. Litchfield, in your case, your agency provides that kind of thing.

Mr. McGuigan: If I can just comment, it sounds like you are not that much different from us. If that regulatory body also has control of rates—and I assume, being political people, they would want to keep those rates as low as possible—

Ms. Hamrin: That is right.

Mr. McGuigan: —your situation is not much different from ours. I am thinking about the technical safety and function and operation, separate from rates.

Ms. Hamrin: Those are not generally the areas at issue as much. Long-range planning is a problem, because whether you have a commissioner who is appointed for two years or four years, his or her interest is going to be what happens in the two years or four years he or she is there. It is very difficult to get the longer-range perspective, and still that is most of what the debate is about and much of what the political issues centre on. Everyday health and safety tend to be pretty well taken care of by everyone. That is not so much where the concerns or the debates lie, from my experience.

Mr. Litchfield: Your question was about transmission-line siting and the environmental effects of such.

Mr. McGuigan: Not the siting, the leakage.

Mr. Litchfield: By leakage, you mean electromagnetic fields set up around—

Mr. McGuigan: Yes.

Mr. Litchfield: That is what I meant by an environmental effect.

Mr. McGuigan: I should clarify that. It is not so much really on transmission lines as actually the lines that go down individual concessions.

Mr. Litchfield: The distribution system?

Mr. McGuigan: Yes, the distribution system. The allegation I received is that our regulations here in Ontario are not as strict as yours as to the grounding of these distribution lines.

Mr. Litchfield: I do not have any experience in that. I cannot tell you. California and three of the four northwest states have bodies—they go by different terms, but they are usually called something like energy facilities siting councils—which have direct regulatory approval over the application for land-use permits, health and safety and environmental concerns associated with a wide variety of energy facilities, all the way from plants to transmission lines to substations to pipelines.

That is where the debate usually rages over what are the environmental effects of high-voltage alternating current, etc. You are at something even more specific than that, I think. It has to do with some of the basic standards that are set up.

Mr. McGuigan: I will rephrase the question. A consumer has a house under construction and they put in the contract that an electrician will put in the hydro system. Before he can move in, he has to have that house inspected. The inspector will be from Ontario Hydro. Does anybody in the United States have an inspector that comes from the state rather than from the utility?

Mr. Litchfield: Yes. They are building inspectors. They inspect for fire, safety, electrical, plumbing and energy efficiency.

Ms. Hamrin: On low voltage, at least in California. If you are talking about a high-voltage line, then usually it is really only the utility that has the expertise for inspecting it. I believe New York has set up a separate team of inspectors to inspect high-voltage things, but that is the only state I know of.

Mr. Litchfield: I suspect there are national standards, I am sure, for transmission-line design and construction. It is more of a professional standard. Electrical engineers live by the code. But for buildings, for Washington and Oregon there is a separate inspector from the utility

inspector. Before they hook the building up, the utility does its own inspection. They are not going to let a builder say "Give me power" and burn the place down. They check it out to the panel, I think.

Before the house can be occupied, you need to get a health safety inspection, fire safety and energy efficiency inspection in Washington and Oregon. Idaho has, I think, fire safety, but I am not sure whether it is state inspectors or whether it is done by the utilities. I really do not know. I am not sure what Montana does. It varies. I do not think it is uniform.

Mr. McGuigan: I think part of your answer is that it would be someone who is independent from the utility who could say to the utility, "We do not agree with your installation."

Mr. Litchfield: Usually, I think they would be saying this to the builder more than to the utility. The utility provides service to the main circuit panel. Most of the inspections I am talking about are whether the wiring has been done correctly, according to code, the groundings are proper and there are three-prong plugs and ground fault interrupters in bathrooms, that kind of stuff. Those are in the code now.

Ms. Hamrin: I guess it is which side of the meter.

Mr. Litchfield: Yes. Up to the meter, I suspect, or the panel, it is just the utility's own standards. That is all I am aware of, except at high voltages. Then there are siting bodies that regulate them.

Mr. McGuigan: I am sort of gathering that you are not much different from us.

Mr. Litchfield: I suspect that is right.

Mr. McGuigan: I have another question regarding our panel here. This is a select committee on Hydro. Over the years there have been many suggestions that this be made a permanent one. I was a member of it when I was first elected in 1977 and I was appointed in 1988 to this panel. I know we had some pretty ticklish points and following the next election we were abolished. The question really is whether there should be a permanent committee on Hydro as part of the Ontario government, taking in all parties, at least offering some permanent system where we have a watchdog organization.

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Ms. Hamrin: I think again it gets back to what you structure in oversight in the recommendations we made for the public review and approval process. If you have an agency or an organization that is reviewing from a technical standpoint

what the utility is doing, then either you give it authority to approve or disapprove or you have it report to a higher body or an elected body which approves or disapproves. If you have given the authority to some other body to make those decisions, then it might not be necessary to have a permanent committee on it. If you have given it the authority to review it and make recommendations back to you, then I think the point is that somebody has to make the decision someplace. The buck has to stop someplace, and it is at that level of deciding who makes those decisions.

Mr. McGuigan: This body, of course, makes all its recommendations to the Legislature. That is the final authority. But going through that process, we are under pretty darn close public scrutiny as to whether we have been doing a proper job. I would like to suggest to our own people that perhaps we might be a very useful body to do that.

Mr. Brooks: I just wanted to note that we as a panel felt we had to carefully stay within our mandate and deal with what we refer to in our recommendation as an independent technical agency to conduct an in-depth public review of Ontario Hydro's power system plans. We did not go into, as we saw it, the political area nor did we suggest that such an agency as we recommend would get into hardware inspections or that sort of thing.

We realize there would be a lot of attention that would have to be directed to the structure of the type of organization we suggest, but we did not feel we could go beyond what we did here. We do recognize that it would be a major job for the government to renew and consider that and perhaps, if it saw fit, to eventually set something up. We certainly did not feel we could go beyond where we did go.

Mr. Chairman: Mrs. Grier, did you have a short question?

Mrs. Grier: I took it from the questions you were allowing that we were interested in concluding questions.

I would be very interested in getting some comment on the concept of resource smoothing, which Hydro defined to us as being the scheduling of projects so that relatively smooth levels of human material and financial resources are needed. The comments we have received from the interministerial review were that this was not a particularly appropriate approach or strategy and I wondered if it was something you had examined or if any of you had any comments on it.

Mr. Brooks: I do not have a particular comment. I know the matter to which you refer but, as you say, it is not something addressed by name in the panel's report. Perhaps members may wish to comment. I do not, I can say that.

Mr. Litchfield: I do not know how I can turn you down. It was something I struggled with because it was kind of a new concept, at least to me. After understanding it better, there was some questioning of Hydro as to what was going on. It appeared that it was mostly trying to schedule your resource acquisitions in an area so that you had a sort of stable workforce working on a particular kind of resource. That is always attractive, I think, from an organizational standpoint. It makes it a little easier to deal with.

Fortunately, our experience in the northwest at least has not been that you can maintain that. You quickly get into a situation where you are either building things just to maintain your workforce and you should not be building those things, or your workforce is not big enough and you should be going faster but you want to keep it stable.

Either one of those seems to be less attractive than understanding that you may need to staff up quickly in some cases and move very aggressively, and then slow down and cut back. While that is difficult for organizations and we have had a lot of complaints and problems with it in the northwest, it is something that is in the best interest of all the ratepayers.

I did not find it terribly attractive either, but it offered a great many useful additions to a power plan that is trying to achieve the lowest-cost energy supply, recognizing that you may have to run really fast at times and slow down at other times.

Mrs. Grier: Going back to our initial discussion of definitions, you would not see that as a strategy or even as a principle that ought to underlie power planning decisions?

Mr. Litchfield: I think that to the extent you can accomplish it, it is a worthwhile thing. If you can achieve other higher-order goals, like achieving the lowest-cost mix of energy resources over the long term, and do that in a way that stabilizes the workforce, I think that is a useful thing to keep in front of you, but it is a lower-order principle or objective than the primary goal of getting the job done at the lowest possible cost, minimizing environmental effects.

Mr. Passmore: I have a specific question and then a more general one. The specific one is for Mr. Govier. When you outlined the deficiencies and you spoke about the process for addressing those in recommendation 20, that review process

works similarly, does it, in Alberta? Could you just describe whether it works well?

Mr. Govier: It works to a degree in Alberta. In Alberta there is legislation entitled the Hydro and Electric Energy Act. We use hydro and mean water. The Alberta Energy Resources Conservation Board administers that statute. The statute provides that the board must review all specific plans for specific actions and in some cases approve them on its own, in other cases make recommendations through the Lieutenant Governor in Council. This includes hydro developments in the sense of dams; it includes thermal generation facilities; it includes transmission lines. All of that is parallel to what we are recommending.

The one area, though, where I think the Alberta legislation is deficient is that it does not include a specific responsibility for reviewing the long-term plans of the utilities. I think, as a result of our exercise, we can see that there would be a great advantage if the long-term plans were subject to continual review, in addition to the specific action plans.

Mr. Passmore: And that this review be somehow binding?

Mr. Govier: No, it would not be binding, any more than any long-term plans, I guess, but it would be the direction that would be agreed upon for the time being. The binding part would come when specific action plans were put forward.

Mr. Passmore: Now a general question, and any panel member can address this. Mr. Litchfield was the first one who raised during the entire day here the word "ratepayer." After looking at the various deficiencies, in terms of cost-effectiveness, in terms of Hydro's strategy, I am left wondering whether Ontario ratepayers should feel a little bit uneasy if recommendation 20 is not implemented.

1630

Mr. Brooks: I, for one, did not fully get that question.

Mr. Passmore: With the various deficiencies you note in chapter 8, plus a number of other things which have been pointed out during the process of the day today—you have mentioned your concerns about Hydro's goal, your concerns about the strategy—I am wondering, based on all the commentary we have heard here today, if recommendation 20 is not acted upon, whether Ontario ratepayers should feel a bit uneasy.

Mr. Litchfield: I will speak for myself. I said when I was talking about recommendation 20 that I think it is one of the key recommendations

in all of this because it establishes some independent review and check and a way to bring to the ratepayers some independent critique of what is going on from a detailed technical standpoint. I do not know what makes ratepayers easy or uneasy. That is the part of your question I am having trouble with; it is kind of a value judgement about ratepayers as a whole. But I think it would dramatically improve the process and improve the quality of planning going on in Ontario.

There is a certain amount of competition in this business and the techniques here are changing rapidly and there are a lot of new ways of looking at every problem. At least in my experience you can never have too few people trying to work on the same problem. Each perspective brought to it usually contributes something new and different.

Ms. Hamrin: I think our comment on the bottom of page 47 where we said, "It therefore lacks the appearance, and perhaps the substance, of independence and neutrality," is the key one.

It seems to me from my experience that there is a tendency for the public to not trust certain large bodies which do their own reviews of things where large amounts of money will be spent in regard to whether the plan is absolutely as it should be and every item has been done absolutely the way any expert working in the field would do it. When it is only the body itself passing review on that, there is a tendency for the public to be sceptical of whether that is the proper thing to be done.

By having an independent body that is neutral, there can be some other judgement which I think gives some reassurance to the public that in fact the plans going forward, which frequently involve billions of dollars, are reasonable to do. I think it is as much that perception by the public of what is being done as the reality that makes it worth having a regular neutral body looking at things and giving some blessing or comments on it as it goes through, so the public can be reassured.

Mr. Brooks: Neither do I know what makes ratepayers uneasy, happy or unhappy, but I guess my hesitation would be that the government of Ontario, in looking at this recommendation from the panel, might say, "No, we're not going to initiate action towards implementing that recommendation and the reasons we're not going to do it are these." It might say, "Instead, we're going to do something else."

I think this panel sitting here today could not say there is not some other action or solution that might go some distance towards meeting these

points Ms. Hamrin just referred to. It is hard to know whether someone might be innovative enough to come up with some other way to do it. We have pointed out the need or why we see the need and it is our thought that you meet the need through our recommendation 20, but someone smarter than the panel might come up with some other way to do it, to meet the same need.

Mrs. Sullivan: Once again, I meant to ask this earlier, but relating to the independent technical agency we have recommended, one of the things that is clear is that the streamlining of the process you are looking at is recommended to reduce the lead times and to provide the independence of assessment and so on.

I am wondering if you could just expand on your words in recommendation 20, "reject those plans, approve them, or approve them in part or with revisions" in relationship to the accountability of the Hydro board of directors itself and what kind of a tension there would be or ought to be. In terms of that kind of an approval process indeed, will the board be necessary?

Mr. Govier: I think what we have in mind there is that notwithstanding the position of the Hydro board that an appropriately constituted, independent technical group backed by the appropriate legislation would have the authority, either in its own right or to make recommendations to the Lieutenant Governor in Council, and that authority would be superior to the authority of the Ontario Hydro board, the Ontario Hydro board presumably would authorize the submission to the independent body of a proposal, of long-term plans, of specific action plans. But certainly my concept would be that the body we are talking about would have a superior authority.

Mrs. Sullivan: There are many other areas other than the ones that have been suggested that might be dealt with by this technical agency, including ongoing financing and so on, which are already looked at by the Ontario Energy Board and other matters that are very much a part of Hydro's operations although they have not been particularly examined in the strategy report. Where do you see that agency fitting in in terms of those other areas?

Mr. Brooks: I think at least two acts, the one under which Hydro operates and the other under which the OEB operates, for example, if that were the route, would have to be examined and such questions as rate philosophy and treatment would have to be looked at to determine whether it would be as it is now, with the OEB making recommendations only in respect to Hydro's

rates. Should that change or not change? Should the technical body do it, staying separate from any rate approval body or mechanism? There is a host of questions like that that would have to be looked at.

We were really trying to concentrate here, and I hope we are concentrating, on the power system planning as distinct from a variety of other things. However, and I am glad you brought this out, simply adding another regulatory step is, in this day and age, probably not a good thing to do without looking at what the situation is today. That is why we said on page 49, before the recommendation, that the whole train of regulatory procedures needs to be examined with a view to streamlining it. One would hope it would not be just adding yet another step.

It is a major exercise, no question. We are simply pointing out a need, and in most cases we have tried to be constructive. As I said at the outset this morning, we did not simply want to make negative comment, but we did really feel in this case that it would almost border on presumption by the panel to go on and suggest specific things about the structure and areas of jurisdiction in Ontario. We really felt that would be beyond our mandate.

Mr. Chairman: Are there any further questions from the committee, whether they are on topic or off topic?

Mr. Brooks: I had one or two housekeeping matters I just wanted to mention. We have already taken care of one of them with what I just said.

I left my colleague Mr. Litchfield out in the field by himself on this matter of reserve margin. Collecting my thoughts, he is quite right; we did have a discussion of reserve margin. In fact, in some of the material we got from Hydro, there was something to indicate that the current reserve margin was based on a study of a vintage of a number of years ago.

Some of us at least could not really believe that Hydro did not treat reserve margin as a matter for continuing and even continuous review. We also realize it is a matter that goes beyond the boundaries of Ontario and of the Ontario Hydro system, involving the interconnected systems and organizations that represent the interconnected systems.

I think at one time we did consider having a recommendation that would have said that Hydro should update its study and basis on which it sets the reserve margins. Then I think we felt the likelihood was that Hydro does that as a regular thing. But we did have some discussion of it and I had forgotten that when the point was raised. Mr. Litchfield was quite right. I think that was all.

Mr. Chairman: On behalf of the committee, I would like to thank you and your panel for coming and speaking with us today. I think the report you have given provides a great deal of food for thought and the discussion today has added to that, so I thank you very much for coming forward and talking with us. If there are no further comments from members of the committee, I will adjourn the committee until 10 o'clock tomorrow.

The committee adjourned at 4:43 p.m.

ERRATA

No.	Page	Column	Line	Should read:
N-7	N-184	2	51	would like to introduce Dane MacCarthy, who has just joined the panel. Mr. MacCarthy is the
N-7	N-185	1	3	fairness and I put them off until Mr. MacCarthy

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Hamrin, Janice, Executive Director, Independent Energy Producers Association

Litchfield, James, Director of Planning, Northwest Power Planning Council

Beigie, Carl E., Chief Economist, McLean McCarthy Ltd.



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Hansard

Official Report of Debates

Legislative Assembly of Ontario

Select Committee on Energy

Electricity Demand and Supply

First Session, 34th Parliament

Tuesday, September 13, 1988



Speaker: Honourable Hugh A. Edighoffer
Clerk of the House: Claude L. DesRosiers

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Contents of the proceedings reported in this issue of Hansard appears at the back, together with a list of the members of the committee and other members and witnesses taking part.

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Tuesday, September 13, 1988

The committee met at 10:08 a.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY (continued)

Mr. Chairman: I call the morning session to order. I understand Mr. Litchfield has to leave sharply at 12 noon, so we will adjourn the committee at noon. I remind the members of that now so that they can guide their questions accordingly.

Mr. Litchfield has agreed to come to speak to us this morning from the perspective of his own background. He will be speaking to us no longer about what the technical panel spoke about but from his experiences with energy conservation and so on.

Mr. Litchfield has an undergraduate degree in civil engineering. He has a master's in management from Massachusetts Institute of Technology. Prior to becoming director of planning for the Northwest Power Planning Council in 1981, he spent eight years as a consultant in energy planning dealing with such diverse matters as decommissioning of nuclear stations, which may be of some interest to the committee, and energy management for the US Department of Energy.

Mr. Litchfield, perhaps I can turn the floor over to you. I am not sure how you were planning to handle the morning. Perhaps you have some comments on energy conservation and then we can open the meeting up to questions from the members.

NORTHWEST POWER PLANNING COUNCIL

Mr. Litchfield: I would be happy to give you an overview of what we have been doing in the Pacific Northwest, and then I would be happy to participate in any questions the committee might have that could help illuminate our experience.

Yesterday we talked a lot about the planning Ontario Hydro is engaged in. The Pacific Northwest has been engaged in similar planning exercises for about the last seven years. To help you, let me give you some history of electric power in the Pacific Northwest, the four states of Washington, Oregon, Idaho and Montana. We are served by a large public utility, if you will. It is actually an agency of the federal government called the Bonneville Power Administration,

similar in style and type, I guess, to Ontario Hydro. Their primary job is to market the power produced by federal dams in the Pacific Northwest. They currently produce and sell about half of the energy that is produced and consumed in the Pacific Northwest. The other half is produced by investor-owned or privately owned utilities in the northwest.

In the 1970s, utility projections for growth were, as I said yesterday, running at a compound rate of about seven per cent. Those kinds of forecasts were primarily based on a ruler on actual load growth using semi-log paper; you can draw a straight line, and that will represent a compound growth rate. It looked like historical loads had been growing at about seven per cent, so the popular wisdom was that loads would continue to grow like that.

Under those projections, the northwest was going to experience severe energy deficits in the late 1970s or early 1980s, and we began a process of transitioning from primarily a hydro-based system to a hydrothermal system. In the early 1970s, this program was called a hydrothermal program and it involved the intensive development of a large variety of thermal power stations. At that time, the northwest began the construction of 10 nuclear power plants. We also had another 15 or 20 on the drawing boards. We developed about 12 coal-fired power plants and had probably a similar number on the drawing boards there, too.

During the late 1970s, nuclear power construction in the United States, and especially in the northwest, experienced some very rapid escalation in cost. It was a very high inflation period and we began to have difficulty with the completion of the nuclear power plants we had under construction at the time.

By the late 1970s, it was found by the Internal Revenue Service, the tax department in the United States, that Bonneville really did not have the authority to enter into the construction of any more nuclear plants. They were involved in the construction of three of what are called Washington Public Power Supply System, affectionately referred to as Whoops, or WPPSS. They were involved in three of the five WPPSS plants that were under construction but the Internal Revenue

Service would not allow them to enter into any more agreements like that.

So it appeared that for much of the region, Bonneville Power was going to be unable to meet the region's load growth. They issued what we call a notice of insufficiency to all of their utilities. There are about 140 utilities in the Pacific Northwest and when they received the notice of insufficiency, it more or less notified them that they were going to have to develop their own resources. They could no longer turn to Bonneville and expect to have their load growth met.

This caused a lot of uncertainty and complexity in utility planning in the northwest because there was no one really integrating everyone's efforts. So a very significant effort was undertaken to pass the Pacific Northwest Electric Power Planning and Conservation Act, whose primary purpose was to allow Bonneville to acquire new resources.

In the process of securing the northwest power act, it was felt that an independent planning body needed to be formed to overview and guide the utility efforts to plan for resource development. This provision of the northwest power act ultimately resulted in the formation of the Northwest Power Planning Council, which I work for.

There are eight members on the council. Two are appointed from each of the four northwest states and they are appointed by their governors and confirmed by the legislatures in each state. The council formed and first met in the spring of 1981.

Under the northwest power act, the council has three primary mandates. The first is to develop a long-range electric power plan for the Pacific Northwest region. The second is to develop an efficient wildlife program that will compensate for and help mitigate the impacts on our fish and wildlife resources of hydro power development. The third mandate was to conduct both of the two primary mandates, the power plan and the fish program, in a very open, public way and to emphasize with a high degree the need for active, meaningful public involvement in our planning processes.

So the council ultimately was established by Congress to try to bring together some regional consensus of what resources were likely to be needed, which were going to be most cost-effective and how we should go about meeting our future energy needs in the lowest-cost way.

The current terminology of least-cost planning is very popular in the United States. I think the

council was the first group really tasked with comprehensive planning responsibility, and our primary goal was to achieve least cost within obvious environmental constraints and social public policy constraints.

The council was given a charge by Congress to plan for resource acquisitions, relying on conservation as the highest-priority resource. Congress told us, "Not only develop a power plan, but in your development of a power plan, you should establish and use a priority listing for resource acquisitions, and conservation should be the number one priority resource."

In fact, to provide it with extra emphasis, they directed the council to include conservation measures that cost up to 110 per cent, or 10 per cent more than similarly reliable and available generating resource alternatives. So we were to give conservation the highest priority and we were to provide, in fact, a cost advantage to it, to acquire conservation that was more costly than generating resource alternatives.

The second-priority resource in our planning directed by Congress was renewables. Under that, you include new hydro power, biomass, wind, geothermal possibly, although there has been some argument about whether geothermal is renewable or not. The council has investigated a wide spectrum of renewable resources to include in our planning. Obviously, renewable resources are very site-specific, so I will not spend much time on that because our studies in the northwest probably have little application to the problems you are dealing with.

The third-priority resource was high-fuel-use-efficiency resources: cogeneration, combined-cycle power plants, those kinds of resources that have very high conversion efficiencies and make maximum use of thermal resources.

The fourth and final priority was conventional thermal resources: conventional coal, nuclear combustion turbines, those kinds of things.

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The council was also told by Congress that we had two years to develop the first power plan. I think Congress thought that was an amazing amount of time and that we would have no problem in completing a plan in two years. Unfortunately, having been part of the initial effort, two years is an absolute minimum amount of time to do this kind of exercise, especially from scratch, with no data, no history and no organizational capability. So we were running at maximum speed from the very beginning.

The council first met in April 1981 and it was about December before we had many of the key

staff members hired, an office with phones and those kinds of things available, let alone computer systems and a lot of the data and analysis we would need to complete the job. A massive effort was undertaken to complete the first power plan. It was completed on time—it was a day early—and it was adopted by the council in 1983.

We recognized that a lot of work had to be done beyond the initial development of the plan and we set out for ourselves a two-year review and revision schedule for the plan. We adopted the second northwest power plan in January 1986; that is currently the plan that is being implemented in the Pacific Northwest. I brought a copy with me. If members would like copies, I would be happy to send you extras. I can leave this one here if you would like to look at it.

The council's planning has been an interesting professional opportunity for me in that it has involved some very difficult and technically complex tradeoffs to be conducted in an environment that is not a typical utility environment. The council meets much like you are meeting here today. In fact, tomorrow we have a meeting in Boise. We meet once a month and the staff normally presents issues to the council that need resolution. There is then an opportunity for public comment and we frequently hear from all sides of the issue.

Then the council makes decisions about what directions to move in. Those decisions ultimately, through formal rule-making, are embodied in the council's plan and we proceed ahead to make recommendations for spending money and making commitments that are irreversible and are therefore very important to the ratepayers and citizens of the Pacific Northwest.

The council's planning, from my own biased perspective, but I think you would find this to be fairly universally held, has a very high degree of credibility right now in the northwest, although I was talking with the chairman yesterday and we have not had to make some of the tougher decisions that may test our credibility to its limits.

We have been experiencing a very large energy surplus. Where it was expected that we were going to have large deficits, in fact the reverse was true. The load growth in the region flattened out and in fact declined slightly during the early 1980s. We are now seeing a resurgence in load growth. Our economy, like yours, is now responding quite quickly to some economic recovery. In the long term, we are likely to need additional resources.

Right now, we are turning our efforts towards developing what we call the capability to secure conservation from every sector of the northwest economy. Our experiences in conservation programs will probably be of most interest to you and to Ontario Hydro. The Pacific Northwest, because of the passage of the northwest power act and because of Bonneville Power Administration, a large federal utility, if you will, had the statutory mandate and the organizational commitment to go out and aggressively pursue conservation in a number of different areas.

I brought with me today a review of the conservation efforts in the Pacific Northwest. It was directed under the northwest power act that after five years of our experience, we were supposed to review how we were doing and the council was to make a recommendation on whether the 10 per cent cost advantage for conservation should be continued. So this report reviews the various conservation programs that went on from 1981 through 1986 and it makes a recommendation that we continue with the 10 per cent cost advantage granted under the northwest power act.

The primary reason for the 10 per cent cost advantage is that there are a number of attributes, demand-side management measures, that are not easily quantified but are generally felt to be positive. For example, it is commonly believed and felt that conservation has substantially less environmental impact overall than the development of new generating resources of almost any type. There are some limitations on that. We have spent a lot of time in the Pacific Northwest trying to deal with indoor-air quality problems that tend to come along with improved energy efficiency in buildings. But nevertheless, on net, the environmental effects are felt to be considerably less.

Additionally, conservation resources, because they are management exercises where essentially each building or each factory gives you the opportunity to conserve some energy, come in very small sizes and can be scheduled to more closely meet your load requirements as loads grow.

Because of these factors and because we have a great deal of experience to gain with conservation yet, we recommended continuing the 10 per cent cost advantage. You remember from yesterday, in the discussion of the supply curve, the typical one that was included in here from the consultant, it does not have a great deal of impact in terms of total resource. What we do is increase essentially the marginal measure or the last

conservation action included in our planning by 10 per cent. So if your avoided costs are, as in our case, about five cents per kilowatt-hour, then you would take measures up to 5.5 cents per kilowatt-hour. There is not a lot of conservation available between 5 and 5.5, so it is not a tremendous increase in total resource. It is more a public policy statement of the importance of the resource and our willingness to give it serious consideration.

Since the passage of the northwest power act, the region has invested substantial amounts of money in energy conservation. The single largest area has been in the weatherization of existing residential buildings. Weatherization is a comprehensive set of features that improve the overall efficiency of residential buildings by improved ceiling insulation, under-floor insulation and wall insulation, improved windows, usually through storm windows, and weather-stripping and caulking to reduce the air leakage in the building. Through these improvements, we have been able to substantially reduce the amount of heating energy required by existing residential buildings. At its peak, the program was running at more than \$100 million a year in budget.

Because of the surplus we are in, weatherization of existing buildings is an activity that is discretionary. We do not have to do it now; we can just as easily weatherize a building tomorrow as weatherize it today. So the program has been slowed down.

This is one of the features of energy conservation programs that are very attractive to power planners. They are not quite so attractive to energy conservation deliverers. They would rather have a more stable revenue source and operating levels so they could plan on continued operations at whatever level they were experiencing, but the program has been slowed down and we are currently running at about \$12 million per year.

The shift in funding has moved from weatherizing of existing buildings, which was sort of the first and easiest thing to attack, to what we call lost opportunities. We talked about this yesterday. These conservation resource opportunities are particularly important during a period of surplus, but they are very important at any time in any power system.

The idea that buildings are being designed, that factories are being built and that commitments are being made that are going to last from—for residential buildings in our region, we have not been able to find out how long they last. We are not a very old region. We have buildings

that easily go in the 50-year to 70-year range. It is hard to tell how long a residential building is going to last in our country because we still have quite a few that were built in the 1700s, so it is possible that some of these buildings will last for very long periods of time.

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If a building built today is built inefficiently, we have done some studies of what you can do to come back and try to retrofit it, if you will, or weatherize it. There is an interesting phenomenon; building standards and building practices at this time in the Pacific Northwest are just energy efficient enough that under today's technologies there is not much you can do to improve them cost-effectively after the building has been built. Nevertheless, before the building is built, there is a substantial amount of improvement which can be done very cost-effectively.

The council, also under the northwest power act, was directed to develop what we call model conservation standards. These were standards for the construction of new residential and commercial buildings. In our studies, we have developed standards that will consume about one third of the energy currently consumed in an existing residential building, and consume about one half of the energy that is currently consumed in a typical home constructed in the northwest right now.

The standards are not that dissimilar to your R-2000 standards. We spent a fair amount of time reviewing the R-2000 program and its results as a part of the development of our standards. If we do not build a home to our model conservation standards but instead build it to current building codes, there is very little we can do to make it more efficient. We lose, essentially, about one half of the energy consumption of the building and we would lose it for a substantial period of time; somewhere probably in excess of 50 years.

Even though we are surplus today, we fully expect that in the next 50 years we will not experience surplus for that entire period of time. There will be periods of time in which we need additional resources and if these homes are not built efficiently, we will regret the fact that we have to build additional generating resources to serve them.

The most controversial part of the council's plan and planning has been the model conservation standards. It is obviously something that not everyone agrees with. A group of home builders in Washington state sued the council after the adoption of the first model conservation standards. That case was litigated for several years

and the courts finally found that the council's standards were valid, appropriate and legal. We finally moved beyond litigating and we are now making substantial improvements in the building codes in the Pacific Northwest.

Nevertheless, the accomplishment of building standards is not an easy task and it has substantial lead times. We started in 1982 with this effort and it looks like it might be 1992 before we have region-wide codes that are to the council's model conservation standards levels. There are some legislative efforts in Washington and Oregon right now that look as if they could bear fruit in the 1990-to-1992 time period.

It is a difficult process and it takes strong leadership from something like the Northwest Power Planning Council and/or the utilities in order to be able to place before the lawmakers the public policy choices of making buildings more efficient, which builders and homeowners generally do not like because of the increased first cost, in exchange for the development of new generating resources which are going to be far more expensive.

It is a long story and I hope I am not boring you with it all, but I think that gives you a brief overview of some of the problems we have had in the northwest and why we have moved to try to pursue energy conservation as our highest priority resource. We are continuing to devote significant resources to the testing, design and introduction of energy conservation programs in every sector.

Currently, the budget of Bonneville Power Administration for conservation activities over the next several years is about \$60 million a year. That is a fairly low level, because, as I said, we are still quite surplus and are focusing our efforts in specific areas where we can acquire lost opportunities or build the capability to design and implement conservation programs in the future.

At the committee's pleasure, I would be happy to answer any questions or go through the conservation programs in more detail.

Mr. McGuigan: I am wondering if the power authority had any ways of helping the home owner, in terms of subsidies and so on—

Mr. Litchfield: Yes.

Mr. McGuigan:—because they could probably borrow money cheaper and pass along some of the avoided costs to the home owners. I wonder if any of that was done and if you could explain that to us.

Mr. Litchfield: Yes, a lot of that was done, and I would be happy to. We have several different programs, all designed at implementing

the model conservation standards. To begin with, there was a lot of controversy over whether the standards would save the amount of energy estimated by engineering studies. Bonneville Power, under the council's recommendation, developed and implemented a program called the residential standards demonstration program; 423 homes were built to the model conservation standards. A comparable number was built to current building practices and instrumented so that we could compare the two groups.

The results of that study confirmed that the council's model conservation standards were both cost effective and were the kind of standards the region should implement. The incremental costs of building to the standards were completely compensated by Bonneville, so the home owners in those 423 homes were able to buy the house at no increased cost. The average cost of those homes was about \$3,000 per home to build the additional insulation and energy conservation features into them.

After that, Bonneville began, also under the council's direction, a program to encourage what we called early adoption of the standards. Local governments and utilities that were willing to adopt and enforce these standards by their own local authority were provided with financial assistance, of two kinds, from Bonneville. First was training and inspection enforcement assistance, paying for the increased cost to inspect, to make sure the buildings were built correctly. The local government was funded to keep it revenue-neutral on moving to the standards and the home owner or builder was compensated for a large portion of the incremental cost, not all of it but most of it. The current compensation under the early adopter program for builders and home owners ranges from about \$2,500 up to about \$3,500 per house. We have different climates within the region. Cold areas cost more and are compensated at higher rates. They also save more energy.

A third program area was a program developed for voluntary construction to the model conservation standards. This is a program called the Super Good Cents program. As you might imagine, it is a little slick. It is primarily a marketing program, so there are lots of TV commercials and T-shirts and hats and jackets, all the paraphernalia that you run these things under. The program is essentially trying to encourage builders and new home buyers to request model conservation standards construction.

If you choose to build anywhere in the region right now, all of the utilities in the region are offering the program. As a home buyer or a builder, if you choose to build a home to the MCS, you will be compensated somewhere between \$1,000 and \$1,500 for the construction of that home.

Now, costs of construction are a very dynamic thing; they change over time and each builder changes. We are getting a lot of sort of anecdotal evidence right now that many builders are doing quite well at \$1,000 to \$1,500. The costs of constructing to our standards are dropping very quickly as builders are becoming more and more familiar with the techniques and the practices; and as the demand for the materials increases, the cost of materials supply decreases.

There were these three major efforts: (1) the demonstration program, which compensated full cost of building the homes to the standards; (2) the early adopter program—it is still going, by the way; the people who have adopted the standards are still being compensated for essentially every house that is constructed to the standard in their service territory, and that is between about \$2,500 and \$3,500—and (3) the voluntary marketing program. Anyone can build to that. They get a compensation of about \$1,000 to \$1,500.

There are two other features in the MCS that I think your question might have been getting to. The standards under the act were directed to include all regionally cost-effective measures. There has been a lot of debate about this, but generally the direction for the council is if it can be demonstrated that a conservation measure is of lower cost to the region than other alternatives, we have to include it in the standards. That sets the standard. But all of those measures may not be “economically feasible to the consumer,” the terminology used in the northwest power act.

There are two completely different perspectives on building standards. One is what is in the best interest of the utilities and all the ratepayers as a whole. That sets the standard. But then, when you look at each measure, there may be measures in there such that, given that I am a home owner and have a certain tax rate and certain financing costs, as you mentioned, and a particular retail power rate that is different from the marginal cost of resources to the region, I may or may not make out well on every measure.

We did a separate analysis, from the home owners’ perspective, of how well the MCS would perform for them and found that some amount of compensation is necessary in order to make the standards economically feasible to new

home owners. The minimum amount we think should be paid again varies by climate zone, but is about \$200 to \$500 on the low end.

Mr. McGuigan: A one-time payment?

Mr. Litchfield: An upfront payment of that amount will compensate for the measures included that do not quite save as much energy at current rates as the first cost of the measures. They are regionally cost-effective, but they are not cost-effective to the home owner, at least not with a sufficient payback. We use different discount rates.

There is a lot of economic analysis that goes into this. Obviously, we are all different, so it is some average consumer we are trying to deal with. There is some amount of compensation envisioned under the northwest power act and included in our programs at a minimum. It is possible that amount will go to zero as the costs of building to the MCS come down. As builders get more efficient at delivering these energy efficiency measures, it is possible that there will not be any compensation necessary. We are hopeful we can get to that at about the time the region adopts the standards in every state.

Mr. McGuigan: Just for clarification, the \$2,500 to \$3,500 is on what sort of an average-value home? In other words, what percentage would this be?

Mr. Litchfield: The average value is somewhere around \$80,000 for a typical home. These are homes that, on average, are running about 1,500 or 1,600 square feet. These are built under, I think, framing practices similar to what you use here. They are usually what we call stick-built, two-by-six walls. Something that I personally learned out of this exercise is that when you look at where energy is going as it leaves a building, there are few things that really make a big difference. I guess if I had thought about it, I probably would have come to this, but only after a lot of analysis did it strike me.

The windows are tremendous losers of energy, so the amount of glass and the overall energy efficiency of the glass is very critical. Windows are also very controversial, because window manufacturers like to have a wide spectrum of windows, everything from Volkswagens to Cadillacs, and they do not like their product line being narrowed. We are trying to cut out the dogs, and there are a lot of them that are really terribly inefficient. Even though most windows are double-paned right now, what is very popular is a solid aluminum frame, and the frames lose tremendous amounts of energy because they are great conductors of heat flow directly out of the

building. Windows are the single biggest improvement.

The second is the walls. There is a large area tied up in walls, so the council's wall standards are significantly tighter than what was being constructed before we got there. If there was wall insulation being used, and in two states that was true, it was generally two-by-four construction and R-11 was about the most that could be put in that. The council's standards are R-19 in our warmest climate zone and R-27 in our coldest climate zone for wall insulation. The cold-climate zone involves two-by-six construction with exterior foam or commercial products that are a foamboard insulation. Thermax is a typical product.

Ceiling insulation does not matter nearly as much, because a long time ago builders were convinced that they had to insulate the ceilings. There is a general sense that heat goes up anyway so it must be going out through the ceiling. In fact, heat radiates in all dimensions almost uniformly, so additional ceiling insulation does not really save very much.

Infiltration is another big problem—the amount of leakage, how tight the building is. From an energy efficiency standpoint you would like the building absolutely airtight; from an indoor health standpoint you want it as leaky as possible. These two objectives are absolutely in conflict with one another, and the council has spent a significant amount of time trying to overcome what is basically a public policy void in the United States, and that is good indoor-air quality standards—"good" being somebody looked at the problem and set them. There really are not any standards.

I saw on TV yesterday morning here, on the morning news, that the Environmental Protection Agency now is finally getting some national data on radon in homes in the United States. It is a significant problem; two thirds of all the homes in the Dakotas, they said, had a radon level in excess of what was felt to be the maximum allowable by the EPA. We have got a lot of radon monitoring data in the northwest, and it is very site-specific, but we have some real problems.

Radon is an indoor air pollutant, a very serious pollutant. It is generally felt that it probably is a big cause of lung cancer in the United States, and it certainly is synergistic, in a negative sense, with smoking. There is going to have to be a lot more work done on that.

In our standards, we specifically tightened the building and then required the inclusion of mechanical ventilation and fresh air makeup so

that the building could be ventilated by the home owner. We also developed a path involving what is called a heat-recovery ventilator—mechanical ventilation that exhausts the stale indoor air but passes it by the incoming fresh air and transfers the heat, at least some of the heat, from the outgoing air to the incoming air. It recovers some of the heat that you would have lost. We are still working on that, but there is a real public policy problem with indoor air quality.

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Mr. McGuigan: Just to zero in on the heat recovery ventilator, I saw one of those in an R-2000 home five or six years ago. They made the claim that it recovered 80 per cent of the outgoing heat. Is it mandatory to have that in those homes?

Mr. Litchfield: Initially, our standards required it as mandatory, but in that demonstration program I told you about where 400 homes were built, they all had heat recovery ventilators. The council found some things that gave us pause. First of all, many of the builders had no idea how to deal with infiltration and ventilation. The whole technology of mechanical ventilation, balancing it so that it operates appropriately, is not well understood, and it is quite complex. So a lot of them were being installed improperly. They were not working. The list of problems was endless, about everything from installing them backwards to clogging up the system. They were not hooking them up correctly.

The council found it was not reliable. It could not be installed, given the technologies that we had and the equipment that we were using in the northwest, in such a way as to reliably count on it, and we went with a simpler requirement of just including bathroom and kitchen fans that at least have specifications that will ventilate the whole building, and installing what we call fresh-air makeup ports. They are special entries in every room so that fresh air can be drawn into the building.

What this does is exhaust the heat, so you lose it. It costs us more in energy, but it looked as if it was more feasible for our builders to handle it and to get it installed in such a way that it would work. We still allow builders who do know how to use heat recovery ventilators to use that technology. That is an alternative path, but we developed a simpler path for most of them.

Mr. McGuigan: One more question. Do you have time?

Mr. Chairman: Yes, just one more. We have some others on the list.

Mr. McGuigan: Quite a number of years ago, Ontario Hydro supplied hydro at 25 cycles. I guess we were the only area in North America that was on that cycle. They put on a big engineering project to convert everybody.

Mr. Litchfield: To 25 cycles?

Mr. McGuigan: To 60. They converted to 60. They had a company that went around the province with vans and all sorts of equipment. They did it very systematically and very cost-effectively. I am wondering if the problem with retrofitting is not the fact that it is done on such a piecemeal basis. You have no way of keeping track of the costs. It is all time and material.

If we did the conversion on the same basis that we did the 25-cycle conversion, we would have to do it with an almost evangelical approach to it. That is what was done in the early 1950s in converting from 25 to 60, and it worked.

Mr. Litchfield: It is a good idea and we did it. There was a big argument when the council first met over conservation. You can calculate how much is available. It is called the technical potential, and that is analytically driven. You survey the buildings, you get a sense of what you can do, you estimate how much saving you can get in each building and you get a total number. The council, in our planning, still uses 85 per cent to be the goal. We are going to get 85 per cent of the technical potential, of the total amount of saving that we think is out there.

Some amount is probably just—I mean, the guy is going to greet you with a shotgun and tell you to get off his property, or there are technical problems that you do not anticipate and you just cannot get to it. Eighty-five per cent was felt by most of the utilities to be an extremely high number and probably not achievable. They still feel that way. Tomorrow, I am absolutely certain, in our hearing on our update of our power plan we are going to get comment from a number of utilities and others that our estimates are still way too high.

To test that, we developed a program called the Hood River energy conservation program. Hood River is a small community, a county, in Oregon. It is about 60 miles from Portland, up the Columbia River. The idea of the program was that we would do what you say: instead of piecemealing it, taking it one house at a time, we would go in there and intensively and as quickly as possible—it was done in about two years—weatherize every home.

Bonneville Power and Pacific Power and Light both serve the area, so they teamed up and ran an intensive energy conservation program to see

how high a penetration rate, how many of the houses they could get, and they tested energy conservation measures that went beyond what we thought was cost-effective. They did everything anybody would ever think of doing, even things we thought were not great ideas. It cost about \$20 million, so it was not cheap, and it is not that big a town.

As with a lot of programs, there is good news and bad news. The good news was that they got a very high penetration rate. They went and paid 100 per cent of the cost, so energy conservation to these consumers was free, other than the inconvenience of having people crawling through their attic and under the house and all that stuff. It was free.

They got great community support. They had active community advisory committees, they developed an awful lot of community spirit and now they are the most energy-efficient community in the northwest. The program was very well received.

The bad news was that some of the energy conservation measures did not look very cost-effective, and some interesting interactions were observed between human behaviour and energy efficiency that we knew were there but we did not really know how big the effects were going to be.

This community is a rural farming community, largely apples and pears. It is an orchard area, and they were burning a lot of wood. They had seen very high runups in rates, like everyone in the northwest, and they had taken action to put in wood stoves and to reduce their electric heating. Once weatherized, they found that wood was less attractive. Their energy bills had dropped enough that they were more willing to go back to electricity. We saw some fuel shifting going on that reduced the total amount of savings expected out of these buildings.

Nevertheless, it did what you said. I suspect your instincts are probably right on, that we could reduce costs considerably by campaigning instead of doing such a piecemeal job. Right now we are still piecemealing it, trying to test and demonstrate, but we did run that one campaign and it did show that in a period of a couple of years you can do an awful lot.

Mr. McGuigan: Just quickly, do you have a figure per house?

Mr. Litchfield: It is in this report I can leave with you. It would take me a minute to look it up. I will leave the five-year review of conservation with you and there is a compendium of technical reports we could provide you with, but I think it would take me a minute to dig out the numbers.

Mr. McGuigan: Maybe we can ask our research staff to bring that out to us.

Mr. Litchfield: Yes. It is in here. It has the total cost and the total saving.

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Mr. Runciman: I was just wondering how the Northwest Power Planning Council compares with the kind of proposal you made yesterday, the technical advisory panel, in respect to the recommendation you felt was so important. How would you see it operating in comparison to the council you are employed by?

Mr. Litchfield: It is probably different, but I am not sure how, because our recommendation is—what?—a couple of sentences and our council has seven years of experience. In my own mind, there are certain attributes that are very similar. First of all, we are independent from the utility community. That gives at least the perception, and I think in reality it gives some public credibility that would not exist otherwise, to having an independent review. Bonneville still does its own planning. We compete in a lot of ways with each other, and we argue about the numbers and what the right actions are, but I think the public feels, at least the public that I have talked to, that the council gives it sort of an independent check and a co-operation. If both the council and Bonneville think something is necessary and important, then they feel a little more comfortable than if just Bonneville by itself thinks it is important.

The recommendation that the panel made was mostly for a review of Ontario Hydro's plans. They were going to review the plans, approve them or modify them. I think that language is more typical of what has been done in Canada, and therefore the panel collectively was more comfortable with it, but that is not what we do. We do not review Bonneville's planning. We do, but that is not our primary job. Our primary job is doing our own plan, and when the council adopts this, it adopts its own plan.

Now, there are certain things that are very important in the northwest power act that make this something useful and important. The question of authority is ultimately where it rests. There was a question yesterday about the Ontario Hydro board of directors. I think you asked about it. What is their purpose if there is a review body that is making all of the choices? In the northwest power act, Congress basically did something that I think works fairly well; that is, it told Bonneville that it could go and build and acquire the power out of anything it wanted, so long as it was consistent with the northwest power plan.

Then it told the council, "You have to develop a plan, and to the extent that the council and Bonneville can reach a consensus to act, you are free to go ahead and do it." But if we cannot agree, if the council and Bonneville for some reason disagree, then the remedy is we have to go back to Congress and try to get it to resolve it, which is generally not where you want to go to get things resolved.

Mr. Runciman: I may have misunderstood you. I thought earlier you said your decisions were irreversible. Maybe that was relating to something else.

Mr. Litchfield: What I meant there was that with the actions we are taking now where we are spending money, once the money is spent, it is done. There is a difference between the plan, which is what we might do 10 years from now, and the action plan, which is what we are doing right now. Our decisions fall into two categories. The first is the ones where we say, "Spend money now," and we spend the money. I meant those are irreversible physically in that we either did it right or made a mistake, but it is not something we can change.

The things that are in the future, the hypotheses as to how we might behave, are all changeable by the council. Nothing in the council's planning has to be done absolutely as we write it. There is a continual negotiation between the council and Bonneville as to how to get this job done.

Mr. Runciman: You indicated a competitive sort of relationship between you and Bonneville. I do not think we have anyone from Bonneville appearing before us during the hearings, do we?

Mr. Litchfield: It would be easy to secure someone, I am sure.

Mr. Runciman: I wonder what their reaction would be with respect to the establishment of your council and how they feel it has helped or hindered them over the years.

Mr. Litchfield: Bonneville has about 3,000 people, so I am sure you can find both ends of the spectrum. There are people I work with at Bonneville who I think believe the council has been a great help in a lot of ways. They, like Ontario Hydro, do not have a very easy job. They probably have an even worse job in that they have more utilities to serve. For them to get a consensus of their 140 utilities, each of which has a board of five or 10—they are lucky if they have only one guy who is the manager—it is very difficult for them to get a consensus as to how to act, and in a lot of cases the council has been

useful in cutting through all that and getting some firm direction and some action started where paralysis would have been our tendency before.

In other ways, there are tremendous authority questions. Can the council direct Bonneville? Bonneville says no; we say yes. It is like any institutional relationship; the council is the council and Bonneville is Bonneville. A lot of it is learning to work together. If we both have similar objectives, and we do—to try to achieve the lowest cost of power in the future and establish a reliable power system that can support growth in the northwest economy—then we are both trying to seek out solutions to that problem. We may have different opinions about how to do that, but by working those arguments out, I believe we improve the overall quality of the decision.

Mr. Runciman: When you are making these planning decisions, do you look at questions such as the debt load and what impact this is going to have on rates for consumers? It is a special interest of mine in respect to the debt load carried by Ontario Hydro, and I am wondering if that is part and parcel of your review process.

Mr. Litchfield: The debt load is part and parcel, especially the rates and what happens with power costs. Debt is a big issue in the Northwest right now, as it is with Ontario Hydro. Frankly, from my own personal standpoint, I do not know whether it is a real problem or whether it is just a perception problem. For example, Bonneville is very highly leveraged. It is all debt; there is no equity. Most of the debt is tied up in repayment of funds borrowed to build dams or WPPSS's debt; most of it is nuclear debt right now. It is just nondiscretionary; you have to pay it. It is a fixed cost. You have to make your mortgage payments.

It causes us problems because there is lots of uncertainty from year to year: in weather, how much water will get down the hydro system determines how much energy we can produce; in aluminum prices, we have a very big industrial segment that is completely driven by the London Metal Exchange; and in natural gas prices because we compete with natural gas in California, so the amount of revenue we can make on power sales to California varies from year to year depending on what natural gas prices are doing.

We have three basic commodities which are completely unknown and unknowable which change our revenues from year to year, yet our costs are relatively fixed; there is very little flexibility in them. This has been an issue and the council has talked about it and there are things

that can be done to try to move away from continued total reliance on debt, but the major motivating factor still is the least cost of power and it is really not very equitable to expense high-capital-cost resources like conservation or thermal plant development because today's ratepayers pay the whole load and the benefits are strewn out over the lifetime of the resource.

Unfortunately, debt financing is one of the best ways to spread the cost out over the time period of the benefits, but there is an issue over how much reliance there is on debt and how much cost flexibility there is for the utility. We do not have any easy solutions for that.

Mr. Runciman: What are they doing in your area about nuclear waste? How are you dealing with that issue?

Mr. Litchfield: It is not just our area; it is a national effort to try and figure out what to do with the back end of the fuel cycle. It is, frankly, one of those political problems now that is just not coming to a conclusion very readily. They are down to a couple of sites, as I understand it, and there is still a lot of work to be done before there will be approved long-term disposal sites in the United States. In the interim, utilities are storing the spent fuel at the reactor site.

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Mr. Runciman: What would they be doing with these proposed disposal sites? I know there has been talk about using mine shafts.

Mr. Litchfield: The idea is that they have identified a couple of areas that are stable geologic formations. There are a bunch of different alternatives, but the last one I am aware of is a mining exercise. You mine out some material and create shafts. You then lower the waste into the floor, seal it up, seal off the shafts and then you try not to go back. You try to fence the thing and mark it and make sure that people do not drill oil wells through the waste repository. Just as a lay person, I am not sure that is the best strategy in the long term. It seems to me a more retrievable storage gives you more reversibility if it turns out to be a bad choice.

The whole idea of permanent storage is to try to make it very difficult for man to go back and uncover it. That has some good features, but it also has some bad features. It is not very risk averse. If it turns out 50 or 100 years from now that you think you made a mistake, it makes it very difficult to go back and try to recover from it. It is one of those things that is just very controversial and it is going to take a while to sort

it out. The back end of our fuel cycle has still not been closed.

Mr. Runciman: In your most recent plan, do you foresee additional nuclear generating capacity?

Mr. Litchfield: The plan right now does not include in it—the terminology is difficult here. The guts of the plan is something we call a resource portfolio. It is the mix of resources and their schedules year by year throughout the load range, the range of load uncertainty that we see for the northwest. The resource portfolio does not include the two remaining nuclear plants that we have currently in mothballs and they are about 70 per cent complete. This is WPPSS 1 and 3.

Mr. Runciman: Is that Whoops?

Mr. Litchfield: WPPSS. It is WPPSS 1 and 3.

Mr. Runciman: It is a hell of a thing for a nuclear plant—whoops.

Mr. Litchfield: Well, it is one of those acronyms I am sure the Washington Public Power Supply System, if they had it to do all over again, would not have chosen. In public they refer to themselves as “the supply system.” They have been trying to get away from it.

There was a massive municipal bond default on two of the nuclear plants. I think the Pacific Northwest set a record in terms of the largest municipal bond default in the history of the United States. We defaulted on \$2.25 billion worth of bonds on WPPSS 4 and 5, two other nuclear plants.

That is currently going to trial. The trial just started in Tucson. The trial is expected to go on for a number of years. It is a trial on securities fraud against several of our utilities and several bond houses and hangers-on. Unfortunately, it is probably one of the most expensive trials in the history of this country. They had to build a courthouse for it. It has some incredible number of attorneys, 3,000 attorneys or something. They are billing at some awesome rate for attorneys and the ratepayers in the Pacific Northwest are likely to pay both sides of the lawsuit. It is just an incredible financial debacle.

The two remaining nuclear plants that are mothballed, WPPSS 4 and 5, are terminated. They will never be completed.

Mr. Runciman: Can they be converted? I know Detroit converted a nuclear plant to gas.

Mr. Litchfield: Have they done that? I think they are trying.

Mr. Runciman: Maybe they are just trying. I thought they had accomplished it.

Mr. Litchfield: There have been plans to try to convert. I am not sure those make a great deal of economic sense, although they might after you have spent so much money on a nuclear plant.

WPPSS 4 and 5 cannot be converted. They have been cannibalized. They sold the miscellaneous scrap metal that they could sell. There is some residual concrete, but it is of little value. WPPSS 1 and 3 are 70 per cent complete and are in mothballs. We had to stop construction on those because we were running out of bond financing. We just could not finance their completion.

The council spent a great deal of time analysing and debating the role of WPPSS 1 and 3 in the plan. Because of the default on 4 and 5, it was impossible to borrow more money. The market would just not tolerate borrowing by an organization that was in the middle of default litigation, so we could not complete 1 and 3. The council put them in a sort of in-between status in the plan. We found them to be cost-effective under high-load scenarios, if we could complete them when we need them. They would be lower cost than, say, building coal plants.

The estimated cost to complete only, ignoring the sunk costs, is about 35 mills to 40 mills per kilowatt-hour; 3.5 to 4 cents a kilowatt-hour. We put them in a status where we recommended continued preservation of them, maintaining the asset, but we recommended minimum levels of preservation. At the time the council did the 1986 plan, the supply system was preserving them, but at about \$40 million per year per plant. We said: “That’s just way too expensive. We’ve got to be able to get that down,” because the preservation cost is essentially the cost of the option, the cost of the insurance policy. We might need them and could use them.

The costs now are down around \$6 million per year per plant. They appear to be preserving them effectively, but there is still a question whether they can ultimately be completed, and if completed, whether they would operate correctly, as projected. The council is still reviewing that issue. There has been some recent news and we may go back and revisit 1 and 3 and their role again.

Mrs. Sullivan: I apologize that I was not here earlier for the major part of your presentation. My car had an electrical failure, wouldn’t you know? I want to explore with you the kinds of incentive programs you have used to encourage efficiency in the commercial and industrial sectors and what your experience has been in terms of resistance that might come relating to

the payback period, the limitation in the payback period, which may mean that at a point the decision is made not to proceed rather than to proceed. I wonder what your experience has been and how you account for that in your incentive programs.

Mr. Litchfield: A number of programs have been run as demonstration-level programs. In commercial and industrial, there have not been any major programs like the ones I described for residential. They have been much more limited and our focus is now turning to those two areas. All of our programs across the board struggle with what you call the payback problem. It is essentially that all of us, I think, have very high discount rates, if you will, or need for money to consume right now.

At least in the Pacific Northwest—I do not know about Ontario—people are not very inclined to go out and make long-term investments that do not pay back in the next couple of minutes. That is mostly what conservation programs are targeted at trying to overcome. They are doing that through education, information, training and trying to show people that they can get their money back quickly or through financial assistance, to alter the equation so that the paybacks are short and people will then be motivated to do it.

In the commercial area we run a series of programs—the last one was called Energy Edge and we are continuing on with it—that are focused at new buildings and are targeted mainly at the building developer and the architect-engineer for the building. We are finding a tremendous amount of very low-cost energy conservation potential in the construction of new commercial buildings. The paybacks are extremely short. It seems to be just information constraint.

The council right now is considering different kinds of commercial programs. We are in rule-making, to try to re-establish our commercial standards. They are focused more at the educational process for architects than at the building owners. A lot of technology has changed and some of the interactions between the various components of a building are not well understood by building designers. They tend to focus on the architecture, the space, the layout and the kinds of occupants they expect, and they use the same old lights they always used.

You know, yesterday I was noting in here the temperature, and the amount of light that is in this room is phenomenal.

Mrs. Sullivan: You should have been here in August.

Mr. Litchfield: Yes, I bet. It must have been a real treat.

The major heat load in any building is the lights, as well as the occupants. There is tremendous interaction between air-conditioning requirements and the lighting. Significant improvements in lighting efficiency have occurred over the last few years. What we have seen in programs like Energy Edge is that by improving the lighting, you can do that at a cost, but it reduces your air-conditioning requirements more than it costs you to reduce the lighting. So the net cost is negative, if you will. It is beneficial to the overall design.

The other thing that has been happening is that a lot of a commercial building is its operations, so with increased emphasis on energy efficiency, there have been better instrumentation and computer controls of the heating, ventilation and air-conditioning systems, and there are increased comfort levels.

In a couple of buildings, the building operators are thrilled because now when someone calls up and says it is too hot or too cold, they can fix it right away. They can see what the problem is and how it is occurring. Because of the instrumentation that was put in largely for energy efficiency, they are getting much better operation of the building and getting happier tenants. They keep them longer. So there are a number of things that are spinning off. Maybe conservation is our goal, but it is having many spinoff effects and it is in some cases reducing the overall cost of the building.

If the conservation measures that are cost-effective cannot be all good news, we are prepared in the northwest to pay up to the full cost of the measures. At times, the building owners would just be resistant and say: "No, I can't stand the disruption. I am not interested." We are prepared to have to go to programs like the Hood River program, where essentially the conservation was free to the consumer.

Mrs. Sullivan: That is in the commercial sector. Would you take the same approach in the industrial sector?

Mr. Litchfield: The industrial sector has a different approach. The program there has been called the sponsor design program. In this program, Bonneville set up a pot of money. I do not remember what it was. It was a sizeable amount of money. I think it was \$10 million, \$20 million, somewhere in that range. It is described in this report. They set down some guidelines,

but it was kind of like the Public Utility Regulatory Policies Act, the quest for independent power. They essentially told Bonneville's industrial customers: "Look, we are interested in proposals. You know your plant. You tell us what you can do within these guidelines. We have a pot of money and we will fund the best ones first."

The sponsors designed their own things for their plants, came to Bonneville with their proposals and then Bonneville funded some of them. A lot needs to be done there, but the industrial sector is a very difficult sector to attack because each plant is almost a unique animal. Even though both plants produce pulp and paper, only the plant manager really has a handle on the way they go about it, how they have evolved and changed, what kinds of motors and pumps they have and the problems they deal with. We have had a great deal of difficulty getting into that sector and I think sponsor design is probably the way that sector will ultimately unfold.

The problem we have had is that the amount of money on the table from Bonneville was not enough to get a lot of people's attention. You have to really have enough of a program going there, a nucleus, so that industrial plant managers and their energy specialists feel it is worth taking some of their time to prepare proposals, and there has to be a high enough success rate so that you are not just sending paper into the utility and hoping they treat you fairly.

Mrs. Sullivan: I would think that would be particularly true here, where we have an extremely high percentage of equity ownership in the small business manufacturing sector and the industrial sector. I think you are probably more debt-oriented than we are, so the return on investment becomes doubly important to us.

Mr. Litchfield: Right; that is where utility financial assistance is absolutely critical to make the equation work for them. The sequence in which choices are made is very important and that was one of the things the panel commented on. It is important to identify the cost-effective conservation measures in comparison with other resource alternatives on an equal basis; this level playing field we talked about yesterday.

Once you have identified what you want to do, then you get into the question of how you design a program to go get it. If it takes money, then you ought to be prepared to pay it, because the first step was to decide whether you wanted it. You exclude the things that are not cost-effective. If it is cost-effective, then it would be great if you could get it for free, but if you cannot, you are

willing—we are willing, at least, in the northwest and the panel recommended that Hydro should be—to pay what it takes to get it.

In our experience, you do not have to go handing things out for free most of the time. People do see benefits from these and they will recognize the improvements in their plans and buildings.

Mrs. Sullivan: One of the things Hydro has done which I think I have mentioned before—I do not know if I am the only one who is excited about this program on this committee—is its energy audits, which have been really useful for businesses in my community. One of the things the industrial community has been doing as a result of those energy audits is actually reviewing its own information systems and moving into new systems that will put more demand on electricity ultimately, and it will ultimately make those firms more globally competitive. I wondered if you had used that same kind of expertise going out rather than having people come in for the industrial sector.

Mr. Litchfield: Yes. There has been a substantial amount of that. It has not been so much organized programs as it has been the utility working with its customers to try to offer them assistance in various areas as to how best to use their product. Some of it is marketing—load building, as you indicate—and the overlap between marketing and energy efficiency is really pretty blurred. It is not that one should be done at the exclusion of the other. At least in the Northwest, our purpose is not to do without. Energy conservation, very clearly in the act and to the council, is not changing amenity levels. It is not doing without; it is trying to make the most of what we have and use it as productively as possible to improve our economy and our society.

When there are uses of electric energy that improve the overall efficiency of the operation and improve its ability to compete in world or regional markets, we have engaged in that. A significant program, about \$100 million, was just accepted by the direct service industries, the aluminum companies in the northwest, to substantially improve their energy efficiency. The overall payment to the companies for their energy conservation is based on the number of kilowatt-hours per pound of aluminum by which they demonstrate they have actually reduced their energy consumption.

In running that program, we tried to run fairly complicated models of how the aluminum companies operate in a world aluminum market,

and it looks as if there may not be a lot of savings because as they become more efficient they also become more competitive. They may reduce their kilowatt-hours per pound of aluminum, but they are going to increase the pounds of aluminum they produce. On net, we think we will not save a lot of energy in all cases.

Mrs. Sullivan: But you improve productivity.

Mr. Litchfield: It is a big productivity improvement and we end up with a much more stable aluminum industry, which is a big problem for us. They are about 2,500 megawatts a load, and their swings are about half that, so a 1,200-megawatt idle resource sitting by in case an aluminum company wants to run is very expensive for all of us. The more stability we can have in that industry, the better it is for the utility system as a whole. The council found the program to be consistent with the plan and Bonneville has gone ahead and offered it to the aluminum companies.

Mrs. Sullivan: Have you done much in terms of load shifting?

Mr. Litchfield: No. The Pacific Northwest is a weird animal. It is not at all like your power system; it is a hydro-based system. Because of that, we operate under different energy constraints. Instantaneous peak capacity is absolutely not a problem for us. We sell a lot of it to our neighbours. We have far more peak generating capabilities than we do peak loads, so shifting loads from one time to another is of no value. Everything we do is based on energy consumption. The amount of energy we can generate in a year is completely determined by the amount of water that lands on the region, and that is something we do not get to know until the snow pack is measured in January. Everything we do is geared around trying to adapt and deal with our hydro system and its uncertainties.

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Mrs. Sullivan: That is interesting. That has a significant effect, perhaps, on the load forecasting. So the problems with Ontario Hydro's forecasting are different from the problems that you are facing in your jurisdiction?

Mr. Litchfield: That is right. Let me revise that just briefly. There have been a couple of instances where peak shifting has been done in the northwest. They are very local problems, where we have some transmission bottlenecks. Because of peak growth, transmission improvements were or are going to be needed, and we have implemented some peak shifting programs to go in to try to flatten the peak in these isolated

localities to avoid the development of additional transmission at a much higher cost. So conservation has been used to shift some peaks. It is very limited and was not done as part of our overall planning. Bonneville did it to try to avoid transmission construction.

Mr. Dietsch: How does that affect the reliability of the power source?

Mr. Litchfield: In the instance I just mentioned?

Mr. Dietsch: Yes.

Mr. Litchfield: What was happening there is that because of peak load growth in a locality, the reliability was starting to decline. They were pushing the transmission line and substations to their limits, so they were starting to impact on reliability. By dropping the load, you essentially regain your reliability, and you do it by reducing load instead of increasing transfer capability.

Mr. Dietsch: Did that affect power outages in the areas?

Mr. Litchfield: I really do not know the answer to that. The goal was to do that. From the study I read and the people I talked to, it looked as if they dropped the peak, they got the shift, but it is a question of for how long. That area is still continuing to grow now and they think they got about 10 years out of the stuff they did. They may still have to build the line. It has been shifted in time. Instead of right now or in the next few years, they think it is out in the mid- to late 1990s now. The goal was to try to maintain the same level of reliability.

Mr. Passmore: You talked about some of the objections that you had had to your energy management programs, from builders and so on. Did you have any objections at all from the utilities per se or did they, by definition, see this as in their best interest?

Mr. Litchfield: Oh, no. I think power planning as an exercise is something where each individual has his own opinion about what will work and what will not work. We have had a lot of opposition from lots of different directions. There is not a group I can think of that thinks the council has done exactly what it needs to do. When you have something as complex as a regional power plan, there are just too many areas where people are going to disagree with it.

Generally, from my own personal perspective, the utilities' first reaction was: "What does this council think it is? They're a bunch of political appointments. None of the people on the council has had any utility experience. How can they possibly make these judgements? Who do they

think they are? They're new kids on the block. This is tough business."

After we got through the first plan, they were a little surprised that we made it. Then they were a little less concerned with, "Well, they can't be doing this," than with, "The ideas were not checked out, the data is not solid, you have to use more tests and more demonstration and more experimentation."

Through the 1980s we have done a lot of that. Some things have worked and other things have not worked, and the council has taken those into account. I think more and more utilities have seen the benefits of the plan and have felt it has become more reasonable.

We are, right now, in an update. Tomorrow at Boise at the council meeting, I have to present a draft of revisions of this plan, and the utilities are going to dump all over me. I have talked to them already. I know. So it is not all sweetness and light. There are big arguments, good technical arguments, about what we ought to do and not do.

The problem we have is that council is, I think, trying to find what is in the collective best interests of the northwest. It is a pretty simple mandate in the act, and I think it is trying to carry it out. In doing that, you inherently run against individual utilities' best interests. So some of the things that we have in our planning as big opportunities for the region as a whole hurt some and benefit others. Instead of not doing it, which the ones that are hurt would prefer, we are trying to figure out ways to compensate the losers and make us move forward, but it does not make it less controversial. No one is quite sure whether he is going to be compensated enough to make it useful.

Mr. Passmore: In the review that we looked at yesterday, there were some recommendations made to set up a situation not totally unlike what exists in the northwest. Can you anticipate at all some of the objections Ontario Hydro might have to that type of recommendation, particularly with respect to risk analysis and that area and how you might respond to the types of concerns that it would raise?

Mr. Litchfield: Yes. There are two attributes of the northwest power act and the council that are absolutely critical, in my opinion. The first is, the council has to have some real authority. This does not mean that it does away with the board of directors, I do not believe. It just means they have to have some real substantive authority. If they are just advisory or if our plan is just interesting but nobody has to follow it, it is not

going to take very long before nobody pays much attention to it.

Alternatively, a bigger concern, I have seen in the United States a number of places where plans are advisory. They get shrill. They become advocates. They try to make something happen by staking out outlandish positions. I do not think that is very useful either. With real authority comes real responsibility, and you have to be careful about what you are doing. It also requires others to pay some attention to the process, contribute to it and try to keep it on an even keel so that it does not get too crazy.

So real authority is the first one. The second one, which I think is almost as important, is to have adequate resources. The council is funded under the northwest power act by Bonneville, and the budget for the council was set by Congress to be in a range of \$2 million to 10 million a year. The budget the council just approved for next year is \$7.8 million for all the council's operations. It is not a small amount of money, and utilities comment routinely that it is too large.

Nevertheless, the council is dealing with planning for both power and fish and wildlife. The Bonneville power system has an annual revenue requirement of about \$2 billion a year, and it is probably half of the region. There is another \$2 billion to \$3 billion a year that is our total revenue requirement in the region. It is a relatively small tax, but it is a tax. The resources to do responsible power planning are not small, so you have to have enough resources to do the job right.

The reaction from the utility—the other part of your question—is going to be, "They shouldn't have any authority, and they ought to be cheap." It is what we deal with all the time. There is always a question of authority. If I was at Bonneville, I would be telling the council that it has no authority and does not matter. It is always inherent, when you have both organizations trying to carry out responsibilities, for there to be tussles over turf.

In terms of setting this up, the two attributes in our northwest power act that I think have contributed the most to the council's credibility and successfulness in developing and implementing the power plan has been the authorities granted under the northwest power act, which are not insubstantial, and the resources put into the planning effort.

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Mr. Passmore: Just one quick, final question. You mentioned that if you build a building badly

it is bad for a long time, so it is better to build it properly the first time. Is the choice between new generation 20 years out or energy efficiency today made apparent to consumers in your advertising? Do you approach it that way?

Mr. Litchfield: We tried that. It does not sell very well. Again, it is the quick-payback, high-discount-rate phenomenon. For a long time in the northwest, at least, and I think in much of the United States, it was felt that if you just got your energy rates set correctly so that consumers were seeing marginal cost—inverted rates, set your tail block at marginal cost—people would do all the conservation that was doable.

The research just does not confirm that. Research we have done and that others have done shows that the energy efficiency levels chosen by consumers reflect an implicit discount rate. This is not really a discount rate. It is the effective discount rate they are using, somewhere between 20 per cent and 100 per cent. They are expecting extremely quick payback. It reflects a whole bunch of stuff—lack of information, lack of ability to forecast the outcomes—but basically they are just not easily motivated except through financial incentives and/or regulations.

Mr. Passmore: Perhaps also it is a reflection of something you commented on earlier, that the consumers in the northwest, just like the power planning council itself, have not had to make the hard decisions yet.

Mr. Litchfield: Yes. That is true, but I think we always have a tendency to think: "That plant they're building is for somebody else. It's not because my house is inefficient." It is the problem that collectively it looks bad, but each individual is still making \$50 to \$75 a month power payments, so what is the beef? What looks like an energy conservation resource of tremendous magnitude to us as power planners, to a home owner is a fairly small thing. It is only when the collective is large that you get to resources that really matter.

I think it is a classic problem that on an individual basis people just will not do a whole lot of it. They will do some, but they are not going to get to the kind of resources that can substantially avoid the development of a lot of new generating resources at much higher cost.

We use that argument all the time. When we were doing hand-to-hand battle with the builders, I met with them many times, and my leading argument was: "You think the council is out to get you, but look, here's what we ask. We have two trades in this region. One is pipefitters for coal plant development and the other is home

builders for building energy-efficient houses. We asked which can provide the northwest with the greatest value and we sided with you guys. You should be happy. If we don't build energy efficient houses, then we side with the pipefitters." They said: "Go help the pipefitters. We don't need your help."

It is a good argument, but it does not get you much.

Mr. McGuigan: Mr. Litchfield, we have you today not as a panel member but as an individual, so we can zero in on our primary target, which is to comment on the planning process. I must admit I have some misgivings about the process in that it is open to the criticism that the goal is chosen and then the plan is developed to fit the goal. I have to confess to everybody that is the way I make most of my decisions. I decide what I want; then I start looking for reasons why I am going to buy a new tractor, a new car or whatever. I wonder if you can comment on that process. If you want to avoid the question, perhaps you could comment on activities in your own backyard and even with the council itself.

Mr. Litchfield: Sure. I agree with you. I think there is a certain amount of human nature, which is intuitively driven and so on. By intuition, you decide you want to go in a certain direction. Analytically, there is enough flexibility to make almost anything look good if you work hard enough at it. There is always the perception, when you are dealing with a utility that has a long history, that it has vested in some things. There are some things that as an organization they are heavily committed to and they are not going to pick up the rock and really look at it as objectively as others might. I think several of the panel's recommendations were focused at that concern. Whether it is true or not, I do not know, but additional questioning, probing and working on that will help better resolve it so that it is not obvious at least that it is just purely supportive of what has gone on in the past or what people basically want to do.

On our council there are situations. We are tussling right now with some new council members who want to go out and weatherize a bunch of buildings. The previous council thought we ought not to be doing that; we ought to be focusing on new buildings. This is a matter of policy or judgement or what you think will work or will not work, or what you like. I do not know what it is. The process of developing a plan is not just cranking a bunch of models and seeing what the computer tells you to do. There is an awful lot of judgement.

I think the biggest thing is to make sure the rationale and arguments as to why certain recommendations are being made are there and are contrasted with a fair look at the other alternatives, "fair" meaning they were evaluated on a comparable basis. A lot of different people could pick it up and say: "Yes, I understand that is fair. I understand the process and I understand why that happened." There are some real tough calls in our plan that were not very popular, but the economic criteria, the evaluations and the judgements made by the council were, as clearly as we could, spelled out. That helped a lot.

There are still some people who are really unhappy that the council did not find them to be cost-effective. I am getting lots of cards and letters right now from geothermal folks that we did not find geothermal resources in the northwest to be well enough checked out in terms of exploration and likely to be developable at a low enough cost that we did not include in our plan. We included continued research and trying to figure out what it has. There are people who are unhappy with that, but the criteria are quite clear. We used this information from these reports, integrated it in this way and reached this result.

Another person might reach a different result. There is enough grey in this. Reasonable people can differ on a lot of this, but I think there is a tendency by all of us to continue down a course that we like, that we are comfortable with and that we feel will work. A lot of what we have seen in the northwest is that once we got started down the course, we were almost unable to see any other possibility.

One of the things the plan strongly recommends, and we plan to follow, is the development of what we call options for generating resources so that we start through phase 1, which is siting, licensing and design. You find a site, you get licences for the site and you do the basic design so you know what you are going to build there, but then you do not go right into construction. That first phase is very time-consuming, but it is pretty inexpensive as far as resource development goes. What we used to do is that one would not even hesitate at the end of phase 1. You would go right into construction. Construction is where you really spend some money.

We did not have the ability to stop after phase 1 and ask ourselves, "Are we doing the right thing?" I mean, really ask oneself; not say: "I am committed to this. I have been doing this. I have 300 people hired to do this. I cannot possibly not turn it around." Really, we should ask: "Is this

the right thing to be doing? If it is not, then let's put it on hold. Let's wait and see if conditions change."

That is what we call optioning, trying to set something aside and making that decision on whether to go the next step, and there may be several decisions. Every resource is very important and it is going to be a real test of our capability if we can really objectively ask ourselves, "Are we doing the right thing?"

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Mr. Chairman: Mrs. Sullivan, do you have a supplementary on that?

Mrs. Sullivan: Just on the point of moving along in the options, do you have the ability to bank approvals?

Mr. Litchfield: Yes. The bank is of uncertain duration. There are a number of different licences needed to have a site on, say, a thermal plan. We currently have such a site up by Spokane called Creston. The site was secured about four years ago and they are still preserving it. It is still viable, but the Energy Facility Siting Council in Washington right now is reviewing whether to extend the licences. There were periods of time that it expired. The Environmental Protection Agency gets involved because there are air quality permits and conditions change around you. There is some unknown period of time that you can hold on to these things for and then it probably becomes impossible to hold on beyond that. We do know how long that is. It may be very short for some resources and it maybe very long for others.

Mrs. Sullivan: It is being tested at this point?

Mr. Litchfield: Yes. With respect to the WPPSS plants we have in mothballs, the Nuclear Regulatory Commission tells us, "You can hang on to them for as long as you want." Of course, NRC may change the rules on you, and that may happen tomorrow, but right now they say they are okay. So who knows?

Mr. McGuigan: One last quick question. In that banking process, and I must confess I find it quite attractive, how do you avoid the charge: "You are going to develop it anyway. This is a ruse. You are just trying to put us off and so on?" How do you avoid that or did you avoid that?

Mr. Litchfield: We got that criticism. It came mostly from the environmental community which did not like the idea of a lot of bank sites that would take their resources to fight the licences and then not go anywhere, or put us on a railroad that was going to build them, no matter what. It was difficult. I am not sure we have ever

convinced them completely, but basically they were convinced that council was committed to making this work and would objectively review the step to move on to phase 2. Overall, in the long term, if this concept worked, fewer plants would be built.

The course we were on was, once you start, you are going for it. It does not matter what happens with the real world; you are going to build this plant. You will justify it on all kinds of strange rationales. It is going to displace old, obsolete things, or you are going to save fuel or you are going to market it to somebody else in the short term and pull it back in the long term. All of those arguments have been made, but what we tried to convince them of, and I am not sure they are convinced, was that there is a possibility and a probability that by optioning plans, you build less overall. You build more closely to what you need and you do not get so emotionally and financially committed to where the utilities feel they have to build it or they are going to be in some financial jeopardy.

The other part of this is you have to be willing to take the upfront costs and put them in rates so that the utilities are not left holding the bag. The problem we have got, as regulators have told them: "You hold the bag until the end. Once you get to the end, then with 20-20 hindsight we will decide whether you get the money or not." That has just not worked well at all.

Mr. McGuigan: I guess one conclusion would be that a council such as yours could have a better chance of working that system than would a utility.

Mr. Litchfield: I think there is a perception of greater objectivity. We have eight human beings. I know they are not objective and I know I am not objective. We have all become vested in things. I am sure if you asked any one in the region, "Is the council objective on the model conservation standards?" they would say, "No, they are absolutely crazy." We have really had to push hard there and have been very committed to it and so it is our cross. It is not something that tomorrow, when I present it to the council, I am

going to get one member to say, "Gee, maybe we ought to rethink this." I mean they are committed.

I cannot say we are so objective that we would be willing to take our first-born out and shoot it, but there is a perception of greater objectivity. I think a lot of what happens with the council, because we operate in such a public way, is that we really do have to deal with the alternative arguments from all sides. At least our experience so far is that you cannot just say: "No, we have always done it this way. We are going to continue." If data walk in tomorrow that I have not seen and show there to be real problems with our model conservation standards, we are going to do something. We might stay where we are after we refute the data, but we will put in a lot of effort. If we cannot refute them, then we are going to have to change.

Our credibility solely rests on our ability to take the best information available and make informed judgements on it. The one thing that will hurt us most is if we ignore data or facts or try to sweep things under the rug. Generally, we take stuff as quickly as we can, assimilate it and use it, because it is much more dangerous to leave it outside of our processes than in.

Mr. Chairman: Thank you, Mr. McGuigan. Are there any further questions? Seeing that it is noon, and I know Mr. Litchfield has to get to the airport, I want to thank him very much again for coming in this morning and sharing his experiences with us. I think it has been very helpful to us and I hope you have a good trip back.

Mr. Litchfield: Thank you. I enjoyed this very much. The work you are engaged in is very important, in spite of the fact that most of the public probably does not know, and they do not in the northwest either, that billions of dollars of investment will or will not be made and will be made in one resource or another. I encourage you to take the job very seriously. It is very important.

Mr. Chairman: Thank you very much.

The committee recessed at 11:57 a.m.

AFTERNOON SITTING

The committee resumed at 2:13 p.m. in room 228.

Mr. Chairman: I call the afternoon session to order. We will turn off the air-conditioning and turn out the lights and see what we can do about heat gain in this room, shall we? Maybe we will have a little experiment this afternoon.

This afternoon's witness is Janice Hamrin, who is here to speak to us on the subject of independent power. Janice is currently the executive director of the Independent Energy Producers Association. She has a PhD in ecology and public policy from the University of California and a master of arts in consumer economics. She is the former director of the University of California energy program and former chairman of the American Association for the Advancement of Science.

Janice, perhaps I can turn the meeting over to you. I understand we have some high-tech, audio-visual stuff to go through.

INDEPENDENT ENERGY PRODUCERS ASSOCIATION

Ms. Hamrin: I just thought I would give you something else to look at for a change, so I have put a few notes on to transparencies. What I would like to do this afternoon is spend a few minutes in giving you some perspective on the United States program as I view it: advantages, disadvantages, lessons learned, where it seems to be going and some recommendations I have for your program.

I might mention just some background so you know where my comments are coming from. I started the Independent Energy Producers Association in California seven years ago when the program was first started. I started the national organization, National Independent Energy Producers Association, about two and a half years ago, and I still serve as adviser to both those organizations. I am still executive director of the California group and I am policy director for the national group; so I testify before the Federal Energy Regulatory Commission and Congress and work with about 12 or 15 other states, though my first and longest experience has been in California. That gives you some idea of where my comments are coming from.

I also do not want to indicate or give the impression in any way that we have all the answers, certainly not that California has all the answers. As you probably know, California is a

large state; it has a lot of people. There are some who have suspected that all the nuts and berries sort of roll to that corner of the country, and that may or may not be true. The point is that with the number of resources and the number of people, most everything has been tried someplace. Some of it worked and some of it has not, but there is a lot of experience which has come out of that state which can be transferred to other places simply because of the resources and people available to try new things.

With that as background, I would like to give you some of my thoughts about the United States parallel generation program. I will try not to use much jargon, but some may creep in. The act that was passed by Congress in 1978-79 was called the Public Utility Regulatory Policies Act, PURPA, and it required public utilities, electric utilities, to purchase electric generation from independent producers who were called qualifying facilities; those were people who generated electricity from cogeneration, geothermal, wind, solar electric, biomass, small hydro technologies. There were efficiency standards which were required to qualify as a cogenerator and only certain fuels were allowed to be used. The utilities in the United States are required to purchase that power at their avoided cost, what they would otherwise spend for that electricity but for the qualifying facility. This whole group of qualifying facilities of independent generators is commonly called QFs in the United States. If I slip into term or say "QF," you will know that is the shorthand for anybody who is selling power under the Public Utility Regulatory Policies Act.

I think that was signed by the President in 1979. The utilities in the United States immediately took the act to the Supreme Court and challenged its legality. It was taken to the Supreme Court, I believe, twice—it may even have been three times—so nothing much happened until the Supreme Court had finally issued a decision on whether this act was legal.

In fact, not much moved in the United States at all until about 1981, when two decisions were handed down from the United States Supreme Court that said yes, the act was legal. It did not take jurisdiction away from individual states; the states were still in the position to determine what the buyback rate would be and how the programs would function, but the federal government could tell the country it was in their interest and

public policy interest to move ahead on this program.

It is an interesting act in that there was no industry when it was passed. When Congress said, "You shall buy power from independent producers," there were not any or there were very few. They said, "You will buy from cogenerators," and I doubt there were over a dozen in the whole country. Though cogeneration had been a technology which was used when the electric utility industry first started, most of that had disappeared in the United States. They said, "You will buy from people generating electricity from wind." There was not anybody around who was generating electricity from wind; in fact, the first wind projects were constructed in California in December 1981.

In California, what we had in 1979 when the President finally signed the act was something in the neighbourhood of 12 megawatts of independently generated electricity, and I believe those were from a power plant that had originally been built by Pacific Gas and Electric as a cogeneration facility way back in its early days and had been sold off. We started from there and have gone in interesting directions since. What are the benefits as I see them? Obviously, these are all just my opinions of the program.

1420

The benefits of the United States parallel generation program: The first major benefit, and these are not necessarily in a particular order, is that it shifted construction and performance risks from ratepayers to developers. We had a number of large central power plants that were being built, there were big cost overruns, they were delayed in time and they were not always functioning as they had been intended. What happened was that for independent producers who generate electricity, if it cost them more to build than they thought, that was too bad, that was their cost. If it did not run as expected, then they did not get paid. So you were making a major shift in risks.

I will just say a sentence or two about these, but if you have questions then you can come back and I will elaborate on each of them later.

It stabilized utility rate costs over time and introduced competition and economic efficiency. We were at a point where no one was sure what the next power plant was going to cost. Diablo Canyon nuclear generating station, which is certainly one of the more extreme examples to use, was estimated to cost \$600 million; it ended up costing close to \$6 billion. That is a rather significant cost overrun. With the independent

generators, the ratepayers knew what it was going to cost. They knew what the contract price was and that is what it was, so there was a stabilization of rates and not the big surprises that had characterized the past few years.

It stimulated technological innovation and the use of more environmentally benign and energy-efficient resources and technologies: One of Congress's concerns was that the electric utility industry, as it had been traditionally operated in the United States, was reluctant to try new technologies. They wanted to do what they had always done and to build the same size and types of plants and use the same fuel types, but private industry was willing to experiment and a lot of research and development was really done in the field and technologies were perfected that would not have been developed otherwise.

It reduced dependence on imported oil: That was certainly one of the proposals, one of the reasons for the Public Utility Regulatory Policies Act, and it was successful. We cut the use of oil for electric generation in states where it had been used for electric generation, like California, from 65 per cent of the generation coming from burning oil. Now I think it is probably less than 5 or 10 per cent. But we did increase the use of natural gas.

It supported local industry and economic development: In California, one of the first industries to get into the independent generation business was the timber industry. It had a very beneficial effect on that industry and a stabilization in some respects that made it more economically sufficient. A number of other industries, particularly agricultural-related industries, have benefited by generating electricity. It is another product—wine, so to speak—and also frequently they take what would have been a waste product they have to pay to dispose of and it all of a sudden becomes a fuel and an asset.

It also allowed companies to generate their own electricity when electricity started to become the critical economic factor in their manufacturing process. They got control over the costs of electricity. When electricity is three mills, you do not worry about how much electricity you use to manufacture your product. When electricity gets up to 9 or 10 cents a kilowatt-hour, all of a sudden that is a limiting factor in your ability to be economically efficient.

We added diverse fuels and technologies to the generation mix. Prior to the 1980s in California, most all the electricity came from hydro, some nuclear and a lot of fossil-fuel burning. We have

now brought in a diverse mixture of technologies—wind, geothermal, as well as the use of biomass fuels and some other kinds of fuels—so we diversified the resource mix in size, technology and fuel type.

Added planning flexibility, shorter lead-time, smaller-size generation units, so that you did not have to plan things like in the discussion this morning and yesterday: The utility was not entirely dependent on 15-year-lead-time projects. Even though the theory had been that the nuclear plant or that the central generation plant could be built in 6 or 10 years, they never were, for a variety of reasons. It really added to the problems of long-term planning.

We added this flexibility. For your information, in California, if an independent power producer signs a contract to provide power in California, it must come on line within five years of signing that contract. So there is a deadline that it has to meet.

It improved the quality of long-range planning, which is related to the item before, but it also improved it. There is sort of a serendipitous effect. There are more people involved in looking at all of this stuff. If I have clients or if there are companies that are planning on generating electricity and there are going to be millions of dollars involved, they are going to get involved in the long-range planning because that makes a big difference to them. There is never enough staff.

The regulators feel they are overworked, underpaid and understaffed to do everything that needs to be done. All of a sudden there were extra hands coming in and participating in the review of plans and the debate about various electric issues that had not been there before. Experts were being brought in. That really did improve the overall quality of long-range planning.

Finally, it moved electric generation incentives from cost-plus recovery of investments to pay-for-performance. I think that is the biggest change that was made. Up to this time, utilities billed electric generation. They got paid for whatever it cost. Ratepayers paid whatever it cost to operate it. They paid whatever it cost to fix it. They paid whatever it cost to have replacement fuels if it broke.

You just paid whatever it was you were told that this was going to cost. All of a sudden you had contracts. You only paid for power that was delivered. If it did not work, if it broke down, if it had to be fixed or something else, the ratepayers did not pay for that. That was the private producer that paid for it.

Nothing is perfect. Of course, there are problems that go along with these programs as well. I should say everything has its downside as well as its upside.

First, a major problem we had in California, but all across the country, was underestimating the amount of independent power that was available. When we started, the common wisdom was (1) there is not enough of the stuff to really matter so I am not sure why we are worrying and taking about it; (2) it will not work anyway, and (3) the private sector really is not interested in investing much. As a result, we planned for a party, assuming that hardly anybody would show up. What happened was that we gave the party and everybody came.

Implementation has been rather uneven and poorly understood. Some states have done excellent things in these programs. Other states have done almost nothing. The biggest issue is really more complex than it appears. There are no free lunches. Nothing is absolutely easy and perfect to put in place. Though it sounded simple, you simply purchased the power at the price you would otherwise spend for the same power, figuring that out and how to do it. How to put incentives in the right place is not a simple task. It takes work.

There has been a lot of misinformation about the cost and potential benefits of the program. This has caused confusion. This is true of any program, but I am sure if we get into questions later, there will be things you have had heard about programs. It is one thing to debate real issues. It is another thing to debate ghosts or straw men that have been put in place. An awful lot of that has gone on; so it has not always been clear what really is developed in the program.

Avoided costs, which are what we call the buyback rate, must be tied to a specific amount of power. In California, we did not do that because nobody expected anybody much to turn up. We set an avoided-cost rate and said, "We will pay this to whomever shows up."

All of a sudden it was like General Custer saying, "Where did all these Indians come from?" There were people every place who were ready to sell power for the rates. Because we had not tied it to a specific amount of power, we ended up getting power at one point that appeared to be more than we needed at that particular price. We learned—there is no other state that was making this error and California will not do it again—that you set a price, but for an increment of power as well. A certain increment of power is

worth a certain price. Then you go back and you reprice for the next increment of power.

1430

There has been a lot of difficulty in resolving short-term versus long-term goals for ratepayers. Ratepayers—everybody, as Jim Litchfield said this morning—want a quick return. You want savings today, and still, there are frequently things you need to do today that may not give you savings right now. They may even cost you a little money, but they will give you savings in the long term. It is always difficult resolving these long-term and short-term goals and issues. Ratepayers want to make big savings because the price of gas is very low, so they maybe want a lot of gas generation on the line right now and may invest a lot of money in gas generation. But if the price of gas goes way up later, putting all the eggs in that basket may not have been the best way to go.

On the other hand, you want to get the benefits that you can from short-term efficiencies and short-term technology development, so you are having to balance those all along. I will talk more about it later.

The success of the program is tied to effective long-term planning. This seems obvious, at least to me now, but it was not obvious to everyone. The federal government said: "You will purchase power at what it would otherwise cost you, and you purchase the amount that you need. You do not have to purchase power if you do not need it." But who is going to decide what is needed?

The argument has not been that anyone has said you should buy power you do not need or you should pay more for the power than it is worth. The argument has been, how much do you need and what is it worth? That is tied back in to long-term planning. That is the place you make these decisions, and you do not want to get into them after the fact. Rather, in all the kinds of things we have been talking about for two days, those are exactly the same kinds of things that will lead you to give a reasonable evaluation of what power is needed and what its value should be. You have to have a long-term planning process, and one that, I think, is publicly reviewed in order to do this effectively.

There is an inherent conflict between the interests of utility shareholders—where we have investor-owned utilities—utility management and utility ratepayers as the demand for electricity decreases. This was not recognized initially. This does not say that anybody is inherently bad, evil and wants to do bad things or anything. They just have different interests.

When you need all the electricity you can get as fast as you can build it, then those interests may be fairly similar, but when the demand for electricity starts decreasing and you go into areas of increased risk and uncertainty, you really have different interests. Shareholders want to continue making a big return on their investment and they may not have to make an investment for that; that can be in direct conflict with ratepayers, who want the rates as low as they can possibly be; which may all be in conflict with utility management people, who want to keep their jobs and do the things that they have been doing and that they know how to do best, which may or may not be exactly what either ratepayers or shareholders need.

We have a tendency to refer to a utility as though it is one homogeneous institution, and it is not. There is a need to understand the interests various parties have and how those play out, and then how you put public interests into all this.

Finally, it is just difficult to change a major institution and there is no institution that is much bigger or more capital-intensive anyplace in the world than an electric utility. Changing the fundamental way an institution of this size and importance has always done things is not simple. It does not happen overnight, and there is going to be all the usual resistance to change that one finds anywhere. You should not be surprised by that. Still, there were an amazing number of people who were surprised.

The chairman of the public utility commission in Idaho testified before Congress. He said, "If I came into the Senate and I told the Senate chefs, 'I'm going to bring a fast-food outlet into the Senate to start selling hamburgers and pizza on the side,' you should not be surprised if the chefs from the Senate restaurant did everything in their power to get rid of those guys and to discourage it."

They had never had competition before and they did not like it. They had always had everything to themselves. That was the way they had done things. That is just a normal reaction. You have to understand that and understand how you are affecting the institution and do it as gracefully as possible if it is in the public interest to do so.

What are the lessons learned out of this? The first and main one is to plan for success. Plan your party as though everybody is going to show up, because if you plan for just a couple of folks or that nothing much is going to happen and then everybody gets there, you are going to have a big mess to sort out.

When I first started in this business, people would call me on the telephone and say, "Jan, how many independent generators are there on line in California?" I could say: "Well, let's see, there is Simpson Paper. Then there is Frank down the road." I could start adding up the megawatts. It did not take more than two or three years and I could not add them any more. I could not tell you. Now we have got, in many states in the country, to a difficult point of telling how much of this we have, because we did not start assuming that there were going to be large amounts. We did not put things in place to track. How many are doing what, where? Who is doing what in what sector?

In California, we have a fairly good tracking system. In 1979, as I said, we had about 12 megawatts on line of independently generated electricity. In 1980, we had about 100 or 150 megawatts. In 1981, we had about 300 megawatts. In 1982, we had 600 and some megawatts. In 1983, we had 1,300 megawatts on line. You can see a pattern developing here. In 1984, we had about 2,000 megawatts on line. It did not keep doubling every year, but at the end of 1987, we had 5,200 megawatts of independently generated electricity on line. The equivalent of almost six nuclear power plants was brought on line, effectively in seven years. Six nuclear power plant equivalents were brought on line in one third the time it took to build a nuclear plant and at one third the cost per kilowatt-hour.

The breakdown on this is that, in California, about 32 per cent of the plants on line are gas cogeneration. About 28 per cent are wind. This is by megawatts, not by number of projects. Somewhere around 28 per cent to 29 per cent are biomass fuel. About 10 per cent are geothermal. About four per cent are small hydro and under one per cent is solar electric. That has been the breakout. That is separate from what the utilities have on line in geothermal, hydro and some of the other technologies.

Mrs. Grier: Can I just ask what the percentage of power produced in California by these private cogenerators is?

Ms. Hamrin: We have a peak demand of about 37,000 megawatts, so at the end of 1987, about 12 per cent of the electric generation was coming from independent producers. In 1979, it was unmeasurable; it was less than 0.1 per cent. More important, there is not one California utility that has plans for building a new power plant or anything under construction since this program was put in place. Although a couple of projects have been finished, like Diablo Canyon

which was started 20 years earlier, there have been no new projects started. What you are seeing in California and Texas, which are the two states that had the most activity first, is that almost 100 per cent of the new generation is coming from independent producers.

The second lesson learned, as I mentioned earlier, is that you have to place a cap on the number of megawatts available at any particular price. Just do your economics of what the value is and how much you will take at that price and then you re-evaluate, given the new situation, so that you can keep your planning under control.

Third, a successful program requires regular review. You cannot just do it and walk away. Again, many of us thought you put the program in place. "It's done and I do not have to hear about that any more." There is nothing that is just put in place and done. Just as your long-term planning is something that you are constantly adjusting for what happens in the real world, so your program will need to have adjustments and should be regularly reviewed, not because something is wrong but because you are trying to make it constantly more efficient, effective and responsive to your current needs.

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We found there was tremendous importance in a standard contract. Negotiating with a monopoly is not something I recommend for sane people. If you have only one person who can buy your product, there is no negotiation. It is an uneven match. You can say, "I want to sell it for X," and they can say, "No," and there you are. A standard contract, I think, is a critical element that lays down the basis for what it is you are selling and under what conditions. Then you can negotiate from there if you need some variations on that, but at least you have a base from which to work.

There is a tremendous importance of regulatory stability. This means that when a bank or financial institution looks at your project to see if it would finance it, it has some assurance that the regulators or the government, the people in charge of this, are not going to change their minds next year and cancel the whole thing, that in fact you have a real project that will go forward. There has to be the perception that it is stable and that if you have a 10-year or a 20-year contract, that is really what you have and it is not going to be changed later.

The importance of outside participation and expertise: as I started saying earlier, one of the serendipitous effects of this whole thing has been an improvement in the whole regulatory arena. We have brought in people who have expertise in

a number of areas who will argue the fine points of long-term planning, of what various resources could cost, should cost, might cost, and whether you, as the policy maker, agree with them or not, you have more information in front of you to review in coming to your decisions.

In the past, in the United States, there were the regulators and the regulatees, and so you had the regulators trying to beat on an electric utility and the electric utility fighting back with the regulators and the threat of, "Well, if you don't do what we say, the lights will go out and we will all freeze in the dark." Nobody wants to be responsible for that and that was the limit of the choice.

Now you have a variety of things put in front by a variety of different interest groups and people who are participating. It really has improved the quality of the decisions that are being made and the ability of decision-makers to look at a wider range of choices, rather than, "Do this or the world will end." We all use that threat someplace. You start seeing that there are others who see the world going on under different circumstances.

The importance of a long-term perspective: this is important, and as we said yesterday it is important in long-term planning in general as well as for this particular program. You cannot base everything on the situation that is happening today. You have to look at what is going to be happening tomorrow. One of the things we have done in California and in a number of states is to try to put together a diverse portfolio of technologies and fuel types so that when the situation changes, you do not have all the eggs in one basket.

Although today gas prices are really low, tomorrow gas prices may be high. That does not mean we do not have gas cogeneration. We have it and it is an important part of the mix, but it is not the only part of the mix. Today, there are great arguments about renewable energy resources. They need more upfront capital because they are more capital intensive but they do not have the fuel costs that go on in the future. So you balance out these variable costs and the fixed costs. I think you put together a mix and you look in the long-term where your utility is going to be and you do not just do something that is going to take advantage of the sale of the week.

As I mentioned briefly yesterday, there are a lot of different costs and uncertainties in contracting for this power. Every time you have a hole in the contract or a future liability, a future uncertainty, there is a good chance the banker,

the financial institution will say, "No way; go away." Avoided cost is not the only thing. We have talked about contracts. We have talked about regulatory stability and long-term perspective.

By the way, I might mention your building projects that are built to last 20 or 30 years. That is what a power plant is there for. A 10-year contract may not be practical when you are putting capital investment in a 30-year facility. You need to think of long-term perspective in that way.

Backup power and maintenance power rates can completely destroy the opportunities for people to build cogeneration or can enhance the conditions under which to build cogeneration, so it is not just buyback rates. Particularly where you are looking at opportunities for industry to self-generate, they may not be interested in selling a lot of power to the utility. They may be offsetting the need for new power plants because they are using it themselves, but the maintenance backup rates and maintenance rates can make that entirely unfeasible or can make it workable.

I am not suggesting things be heavily subsidized or necessarily subsidized at all, but there are different costs. We have found in some studies that the costs of providing backup and maintenance power a cogeneration facility are really less than the cost of providing backup and maintenance power for just a straight industrial facility because the addages are random. They are not as likely. There are a number of things, when you have a number of cogenerators, that can actually reduce your cost of providing the maintenance power. So you do not necessarily have the same rates.

The startup phase is important. This is something: You are going towards economic efficiency. You are going towards bringing benefits to the ratepayers, to the taxpayers by doing these projects. But in order to get the whole thing going, we have a chicken-and-egg problem. There is a tendency for utilities all around the United States to say: "We do not need the power today. We have plenty of power." It is maybe worth one cent, two cents or two and a half cents. That is all the power is worth, so nobody comes forward because they cannot build projects that can sell power for two and a half cents.

The utility then looks at the resource plan and says, "We are going to need power in 1995, though, and since there are no independent producers around here who are selling us any power, we are going to have to build it ourselves.

So then they start building a facility that costs more than the two and a half cents they are offering. Then because they have already started building a facility, they still do not need power from independent producers, so the independent producers say, "But you are building something that is going to cost eight cents a kilowatt-hour." They say, "Yes, but we are already doing that and therefore we do not need your power."

You can get this circle where the independent-producer industry is never allowed to develop, is never allowed to come in because there is no starting point. It is important to have some startup base to get things going, to prime the pump, so to speak. That does not mean you prime the pump for ever and it does not necessarily mean you do big subsidies or subsidies for ever, but there are things that sometimes need to be done to get the whole thing started which in the long run should be economical and should still make sense for everyone. You have to start someplace.

The role of the regulators changes. Again, just like electrical utility institutions, it is not always comfortable for regulators or policymakers to have their roles changed either and that makes them uncomfortable. What has happened in the United States is that regulators have been put in a position much more of looking at long-range planning and much less of saying yes or no as far as allowing costs on power plants that are built are concerned.

It is much easier in some respects, or more fun if you have a perverse sense of humour, to sit and pass judgement on somebody's investment of money and say, "No, I am not going to give you the money for that," or: "I am not going to approve that. It was not my fault. I did not build it and so I can pass judgement on whether you were right or wrong."

With long-range planning, some of the responsibility then comes back to you because you have looked at these plans and made some judgements on them, and then you are putting yourself at some political risk if the judgements turn out to be incorrect. There is not an easy shifting and frequently people would much rather be in the position of just disallowing money, slapping somebody's hands and saying it was his fault and he did bad. But that does not do anything to improve our ability to produce power or for the electric utility to do an effective job. They simply are in a no-win position and no matter what they do it is wrong.

Finally, we have learned that there is a need to plan for integration into systems operation and

planning process. Again, when we started and assumed that nobody much was going to show up, you did not have to worry about integrating anything into the system, if there is only a few megawatts. Indeed, when you start a new program, in the early years of the program, you do not have to worry about system integration. But if you reach a point where you are going to have more than, I would say, 15 per cent or 20 per cent of the electric generation coming from independent producers, you have to be sure that everything is integrated smoothly, and you start looking at some operational characteristics that you may not look at in the early part of the program. We are now in California going to what we call a system of adders for different operational capabilities independent plants may have, so that everything functions smoothly within the total utility system.

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Again, it is not unusual for people to feel, "I don't trust anything I don't own and I don't control," so we are trying to get over that and to make sure there are aspects that do not diminish the reliability and effectiveness of the system and still do not give absolute control only to the utility.

Integration into planning: As I mentioned, one of the things we are doing is having adders. For instance, if the utility says, "Well, one reason we'd build a new power plant is we need voltage support," vars. As near as I can tell, you cannot see them, you cannot smell them, you cannot taste them, but they absolutely have to be there. As you can tell, I am not an electrical engineer. Anyway, voltage support, which are called vars, are needed in certain parts of the utility system line.

What we do is say, "Well, what would you do otherwise to get that voltage support?" They would put in capacitors. What is the cost of the capacitors? You can cost out the capacitors, then you can add a value to voltage support if a project can provide that.

The problem we were trying to address and get around in this is that there are very few power plants that provide everything. There are very few power plants that are completely dispatchable, that offer voltage support, that can add black start capability or emergency support. Furthermore, the utility system changes over time. They may need voltage support in a certain area this year and three years from now they do not, the system is changed and they need it someplace else.

If you say, "We will not contract with any project unless it can do all these things," you will find almost no one who can do it, including utility plants. These are system needs; they are not usually provided by one plant. But if you have a list of items that the utility needs for operational purposes and you let the utility establish some value to those of what it would otherwise cost it to get them someplace else, then most facilities can provide something. If they can provide it and if they can provide it at the price the utility says it is worth, fine; and if they cannot, then the utility puts in the capacitors as it would have done otherwise, for the price it said it would cost.

You need to use lead time to an advantage. If you are saying that you are going for some of these things because they have shorter lead time, then use that as a benefit in your long-term planning.

Though intermittent resources like wind turbines do not run all the time—the wind does not blow all the time; I cannot tell you exactly when which wind turbine will run—with years of experience we have found there is an aggregate value, a capacity value, to intermittent resources. In California, wind turbines have an aggregate value of about 25 per cent to 30 per cent capacity factor. The utility can use that for planning purposes. It has a capacity value, it is just that on an individual windmill basis, I cannot tell you when it is going to run and when it is not, but I can tell you overall what you are going to get.

I may not be able to tell you which one of you will be in this room tomorrow as you go to hearings, but if we had a week or two of experience we would know that on the average there would be X number of people in the room.

Options for larger projects as a hedge against uncertainty: This again relates to some of the things that Jim Litchfield was talking about this morning and that we talked about yesterday.

If you have a large industrial producer who is changing his boilers over because the boilers need replacing and there is opportunity for him to put in equipment that could produce 100 megawatts of cogeneration and you do not need the cogeneration right now but you might need it later, you can pay an insurance policy. You can pay an option that at some point in the future, if you need that power, you will complete the process and you will have an agreed upon rate for which you can sell the power. Particularly for larger types of generation facilities, that is a lost opportunity if you ignore an industry at the time it is changing over or coming in new, but you may

be able to pay a fairly small amount to get it to put in the base equipment it needs in order to convert later to generation if you need to use it. So these are the kinds of things you can do to integrate independent generation into your total planning strategy.

There have been a number of questions and comments about bidding. It is an extremely popular concept in the United States right now. I want to make a couple of comments about it.

First I feel it is necessary to talk about the goals. Why is it you even bother doing bidding? There are two reasons that you would go to bidding. One—and this is the reason California decided to go to a bidding system—is that we had so much generation showing up, we had to decide which projects we were going to take and which we were not. Bidding is one way to select when you have more than you need at a particular time.

The second reason is to improve economic efficiency. You are assuming that people are building projects, they are making some profit on them and that you are trying to take the excess in profit and split it a bit between the ratepayers and the company. This assumes that there is economic efficiency to capture and that competition will be there between companies and we will get the economic efficiency.

What happens and what issues come out is that first, timing is critical. If you do not have a bunch of companies that have already been in this business doing bidding, right at the start is not the place to do it unless you want primarily to develop carpetbaggers.

So should you, for instance, decide to institute a bidding program in Ontario right now, you would probably get a number of large US firms that would come in to bid because they have had experience in the United States and because they are big enough that they could afford to come here. But you probably would not develop any real capability for your own companies to do much.

Second, and related to this, you have to have developed an industry and an infrastructure in order to achieve the goals. You are not going to get economic efficiency if nobody knows how to build a project. If you have people bidding and they have never built one to begin with, how do they know what they can save? So you may either have nobody show up for the party or you may have people put in bids that are unrealistically low. Then they go out of business because in fact they could not build a facility for what they thought.

So again, it is important that people have experience so they know what it costs them to build things. You will find costs coming down as they have more experience over time because equipment is more available, because the bank or the financial institution will not charge them as much to do the financing because people have learned the equipment is more readily available. Then you start having a bigger margin from which you can extract economic efficiency. But you cannot get blood from a turnip. Nobody has done it before. There is probably not much there that you can wrench out of it.

You may discourage competition. You may get exactly the opposite results from what you want if you start this kind of program too early. Instead you may end up with just a couple of companies. They are the only ones that get contracts the next time around. Everybody else who was interested in playing the first time disappeared because they did not get any opportunity to build anything. You end up having fewer players instead of more players.

Finally, despite what many people say, this is not simple to implement. You do not go to bidding because it is easier than straight contracting. Believe me, it is not easier. It has its own complexities. They are just different.

Finally, I will just go through a few policies that I would recommend if you want to encourage parallel generation. You may not. The point is that the private sector can build projects for you. They can build a variety of technologies. They can build them efficiently, they can build them reliably, they can make them run and they can provide that to you if you want it there. There are a lot of ways to discourage them if you do not, in the name of saying you do, but not really. There are a number of ways though, if you really want to encourage it, that make a difference.

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The first thing is fair and understandable buyback rates—fair meaning that it is based on what it would otherwise cost you for that electricity from someplace else. If you have to add new power, then you look at what your other options are that you would build or the utility would build if it were going to build a new power plant.

Eventually, if the program were carried to its absolute, logical conclusion, say in California, what you end up doing is that your buyback rate will be based on the cost of the last cogenerator with the last independent producer from whom you purchased power. So it eventually ends up that your avoided cost gets set by the industry

itself when they end up being the only ones who are building anything. But in the initial front end, it is what the utility would do if these guys were not there.

It needs to be understandable or you spend all your time arguing. You need to know what the assumptions are that went into it, why those assumptions were there and whether they were correct. There is an amazing number of things that can change the numbers drastically. So there is not an absolute truth. It just depends. It depends on what you are considering as your options and what you are including in those costs. But it is very important that these be perceived as fair and reasonable as well as actually being fair and reasonable, or nobody will want to play in your game.

I think time-differentiated rates are important. Power is more valuable during peak than it is during off-peak. Average rates may be helpful right in the first years when an industry is getting started. On the other hand, certain technologies are much more able to produce power during peak at select times. I think time-differentiated rates overall will allow you to do a fairer job with the rate structure and will allow you to have a more diverse mix of technologies.

I think long-term contracts are absolutely essential. As I mentioned earlier, you do not build a 30-year facility on a 10-year contract. If you do then you have to assume that all money stops at the end of your 10 years.

Maybe you can negotiate with your friendly monopoly to sell them power after the 10 years, but you have a multimillion-dollar facility. It is already constructed. It is in their service territory. They are the only ones who will buy power. What do you have to negotiate? They can tell you anything. That is what you will have to take because you have no other place to go except for shutting it down. So it really is not a logical alternative.

I think you need longer-term contracts so people can reasonably look at the life of their project and assume that they have some revenue over that time. Also, no utility finances a project in 10 years. They have a much better track record and borrowing record than does the private producer. To expect them to finance projects with 10 years' revenue is probably unrealistic to say the least.

I think there is need for some commitment in advance of capacity so that we do not get into this catch-22 I mentioned earlier: "We do not need the power today so we will only offer you operation and maintenance costs for two cents."

Then we start building our own plant. Then we do not need the power because we are already building our own plant.

You anticipate you are going to need power in 1993. So what if some megawatts come on in advance of that? Utility planning is not that precise. If you are building a 1,000-megawatt unit, you do not need exactly 1,000 megawatts on the day that unit comes on line. If you do, you probably had blackouts the day before because you were not meeting your load.

So in fact there have always been some variations in power as it comes on versus need. If you want to develop a new industry, make some commitment, even though it may be a couple of years in advance. If companies know that you are going to need power and that they may have the opportunity of providing it, they can plan accordingly and you will develop an industry.

As I mentioned, with standard contracts which are bankable, people know what it is they are getting. By bankable, I mean there are no big holes. There is not a paragraph at the end that says, "However, if the president of the utility changes his mind and it is a full moon, all bets are off, the contract is null and void and you start over." That of course is ridiculous, but we have had some examples that are similar. They are frequently called regulatory out-clauses. It says, "However, at any time that the public utility commission decides to change, this contract is no longer good." And the bank will say: "You do not have a contract, as far as we are concerned. It could be ended at any moment and, therefore, we will not finance it."

Uncertainty is the thing that kills projects. Access to transmission is probably not as important an issue right now in Ontario. It has certainly become a critical issue in the United States, particularly as people are going into bidding programs, because if a utility can come in and bid from another service territory but independent producers do not have access to the transmission lines to bid, then you actually may not be getting the most economically efficient mix in your bidding program; all you are getting are those that have access to bring the power in.

Operational adders, as you get more projects on line: Psychologically, it is a better way to have an adder, that you have base cost, base price of what the valued capacity and energy is and then you add, even if it is only a few mills for the other things that you need—for the voltage support or for planned maintenance or for certain dispatchability options. People like to be able to get something more, and they will bill to add those

things, if they possibly can, for the price that the utility has set.

Equitable backup and maintenance power rates, I mentioned earlier. Equitable interconnection requirements and fees: This is the way you can really kill projects. If you really do not want to do this, you can put together a program that looks absolutely reasonable and then when you do the interconnection study you say, "Oh, it looks as though the interconnections are going to cost \$2 million"; all of a sudden the project is uneconomic and it does not go.

We have not had in the United States any real problem with interconnection standards, with safety requirements. Projects have been safe and they are built to utility specifications, but we have started seeing, particularly with smaller projects, utilities starting to come up with estimates of interconnection costs that are way in excess of what they were for other projects that were done earlier. You start then getting independent electrical contractors coming in and bidding and they say, "Hey, we can do that interconnection for a lot less and we usually build the same kinds of things for the utility." You want to be sure that there are not hidden costs going in to kill projects, that do not show up some place else.

Stable regulatory environment, I mentioned earlier. Supported political environment: It was really critical in the United States when many of these programs started. In the states that had the most activity earlier on, there was a supportive political environment as well as the long-term perspective on the need for power.

Independent and regular review of the program and long-term planning assumptions: As I mentioned, that is also a critical part. Finally there is an effective startup program. You can get the industry going but you set some criteria so that when you have reached X stage, whether it is the number of megawatts, the number of companies or something else, then you review the program and may do something slightly different, but that you recognize there is a startup period that may differ from the long-term program after it is already established.

Those are my general comments on how the United States program has gone and what we have learnt from it. I am available to answer any questions you may have.

Mr. Chairman: Thank you, Ms. Hamrin. Are there any questions from the committee?

Mr. Charlton: I like the way you started out the whole discussion, "We thought we were going to have a party and nobody was going to

come," because, obviously, that is exactly the way it has happened in some places where when you go through all of the potential roadblocks it is easy to see how that can happen.

You mentioned that in California in seven years, you brought on line 5,200 megawatts, and I understand that potentially there was a lot more out there. What is the status in California now after the 5,200 megawatts have been brought on line? I assume there is still no talk of actual utility construction of further plants in the future.

Ms. Hamrin: Right.

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Mr. Charlton: What approach are they taking to the potential they had to shut off?

Ms. Hamrin: Okay. We had five contracts for approximately 8,000 or 9,000 megawatts in addition to the 52,000 we have on line. The last date any of those could be built—because, as I said, you have five years to bring your project on line—is about April 1990. If you are not up and running then, you have lost it.

There was a lot of speculation in those contracts. Part of it is my fault. We did a really good job on getting contracts and other things that people could sign. Part of it is the public utility commission's fault because it started saying publicly, "Maybe we have enough and we should quit offering the contracts." Of course, people then ran right in and signed. Part of it was the utilities' fault because they let people sign blank contracts, which I think is crazy, and then they turned around and said, "See, we have got too much." You can get a self-fulfilling prophecy.

We stopped the contracting and we are building out the contracts that are there. In 1991, we will know how much we have. My estimate is that we will get another 4,000 or 5,000 megawatts out of the remains.

Those are the estimates that the public utility commission and the energy commission are using as well. Now they are doing their long-range planning, assuming that that gets built up and then what is needed—it turns out that the California utilities are not planning on building, particularly, but they have proposals for purchases—they can purchase from the Bonneville Power Administration, from some of Jim Litchfield's utilities, if they want to sell power. There are independent companies that are proposing to build coal plants in the southwest and they propose to sell power.

What we are doing is we are estimating what power the utilities need and where they will most likely get it. It is probably not from their own

plants but rather a purchase from the coal plant in Nevada or from BPA. That becomes the cap. If more people sign up, if they decide that Pacific Gas and Electric needs 800 megawatts more and 1,000 megawatts show up, it goes immediately into bid. You come in with a proposal but you have got a sealed bid of what that would cost and then they will do competitive bidding if they end up with more megawatts than they need.

The avoided cost that the utility would otherwise have done, whether it was a purchase price from BPA or a southwest coal plant, becomes the cap, so they will accept only bids under that cap, and then we have a way—it is called a second-price option—of how that will be determined. California will go into a bidding option for long-term power.

Short-term power you want to sell on an as-available basis. You are just placing what the utility already has on line. Those contracts will be available because if somebody sells you power cheaper than you can generate now, it is worth it to shut down some of the things that you have operating. They will still have the short-term contracts, but the long-term contracts will go to bid if there is more power than needed.

Mr. Charlton: Okay. Let me just see if I got that correctly. You are basically saying there are 5,200 megawatts on line now and another 4,000 to 5,000 megawatts out of the stuff that there are currently contracts on.

Ms. Hamrin: Yes.

Mr. Charlton: So you are going to have a package of 9,000 to 10,000 megawatts—

Ms. Hamrin: That will come on line.

Mr. Charlton: —on what is now a 37,000-megawatt system.

Ms. Hamrin: That is right.

Mr. Charlton: What about the options route, especially in the bidding process? If you go into a bidding process, and there are obviously winners in the bidding process in terms of the 800 megawatts that you want right now, and you have got half a dozen bidders that lose out on that with a potential of another 200 megawatts, that is just a hair further removed cost-wise. In other words, they are not out of whack, they just did not win the bid. Is there any potential? Are you looking at taking options on that kind of stuff?

Ms. Hamrin: They have not discussed it. At the moment, we have not gone through a bid process so it is unclear, but I think that would certainly be something that would be suggested. It depends upon how the long term looks and what the needs of the utilities are.

There has been, as I said, a lot of misinformation and arguing back and forth. Last year, PG and E, in interviews with the press and other places, said: "We do not need any more power. We are being forced to buy this power and we don't need power until 2010." That sounded terrible. Why is California forcing this utility to purchase power it does not need? They do not need power until 2010. This year, six months later, in the planning process, it seems PG and E needs power around 1992 or 1993. That was not quite 2010.

Again, there is another concern. The utility likes to build its own power plants. They have a big staff of people who were hired to build and design power plants. If they are not building and designing power plants, what are they going to do with those people? It is a legitimate question but it tends to be argued, "We don't need power now," or "Go away," rather than the upfront debate in some other way. So it has been a really hectic problem in the last six to eight months to try to figure out exactly what power is needed and how soon.

There are large numbers of plants in California, in fact around the United States, fossil-fuel plants that were built 45 years ago. They are at the end of their useful life. They do not meet current air quality standards. They contribute to acid rain and the greenhouse effect. Should they be refurbished—which usually means they still are not brought up to air quality standards—or should they just be retired and replaced? That is a big chunk of power.

Those are all the kinds of things that will have to be balanced by the policymakers who have been trying to get a grip on what has been a wild swing from not having anybody playing the game to having a whole bunch show up and not sure how many of those will be built and now trying to get the dust to settle and say, "What do we really have and what do we really need?" and have the program go in a more organized fashion.

Mr. Charlton: When you were talking about bidding versus straight contracting, you made some comments about problems both ways. Could you elaborate on that a little bit, first of all in terms of what you see is the best way to start out—because essentially we are in the situation you were in at the start—and what you think in the long term is the most useful approach?

Ms. Hamrin: One, I think you need to establish what the goals of your program are. If your only goals are getting the cheapest source of power, then you might not care if it is GE or Bechtel or whoever who comes roaring in to

build something. But if part of your goals is economic development or support for Canadian industries or Ontario industries or other considerations like those, you might well want to develop some capabilities for companies in your area to build projects. I think it is very important that you have your goals straight and then you design the program to meet them.

If you assume that you want some capability within Canada itself to build power projects and some power projects that support industry in Canada as well as just generating kilowatt-hours, and maybe some power projects that use waste materials for fuel instead of having to find some place to dump it, then I would go to a program where you establish the number of megawatts that you need, and some price for those, and the terms and conditions in the contracts, the backup power rates, the maintenance power rates and all of those things up front and see what you get.

I would not limit the size necessarily, though you might want to set aside or say we want so much power from projects of one size and then the other power we will take from whatever-size projects. Industry tends to build bigger-sized projects and I think if your goals are partly to get industry into this as well, you probably want to see what the availability is of big ones as well as small ones. Certain technologies come in different sizes. I would not put a limit particularly on size but I think I would start a program that would get you some stuff.

You want to see what your technologies are. You want to see what they can build at a particular price. You may want to raise the price a bit in order to prime the pump for some discrete increment of power to see what else you get. We found that at 7.5 to 8.5 cents you probably get all the power you want from all different kinds of technologies. At very low prices, you are going to get only one or two technologies.

So, again, if you want resource diversity or if you want renewables, if you have some other environmental goals and you are trying to have fewer air quality impacts, then you may design your program slightly differently. I think you decide what your goals are and design the program that way. Then, if you start seeing a lot of companies getting into the business, you have a variety of technologies from which to choose. Then you might decide to go out into competitive bidding.

You can have that in your back pocket. You can look at the experience as the United States starts going into it and what mistakes are made and what gains are made. Then, when you get to

competitive bidding, you will be able to benefit from those as well.

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Mrs. Grier: When you are talking about projects, are you talking about projects that are necessarily cogeneration or are you talking about the potential for some private companies building purely a power project?

Ms. Hamrin: Both. I think there is a place for both. We have had a lot of wind projects in California. They are providing, as I said, about 28 per cent of the new generation. That is coming from wind, which is an intermittent resource. It has a lower capacity factor, but it has some nice benefits, not the least of which is that it has no emissions into the air. Environmentally, we are going to have to come to grips with acid rain, the greenhouse effect and those things.

Every technology has its benefits and its costs, but having a mix of them is what gives you the strength. I think people will build wind projects. They will build small hydro projects. They will build geothermal if you have any of that resource. They will build some biomass field projects for the benefit of selling electricity to utilities.

Cogeneration projects may be built by third parties for that purpose or they may be built by the industry itself to stabilize its own electric rates. You have a variety of reasons. If I were designing a program, I would want to get some of all of it.

Mrs. Grier: In California, are there the same kinds of regulatory approval processes and environmental approvals required for both private and public projects?

Ms. Hamrin: Yes. Someone had asked me earlier, particularly on air quality standards, whether the independent producers had to meet the same standards. I responded that utilities are not building power plants right now. Most of their power plants are older and they do not meet current air quality standards. Nobody wants to deal with nonstationary sources. Vehicles are still a huge problem.

The only thing that people in air quality have to do is work with any new project coming on line and that means it is the cogenerator. They really get hit hardest with the standards. They have to meet the very newest standards that are there. Anybody building anything new usually has much tougher things to meet than the guys who already have it built.

Mrs. Grier: Given that Ontario, if we got into this, would be similarly, as you were, starting

from nothing because we do not have a major industry, do you think the kinds of targets anticipated by Hydro in the DSPS study are realistic? I think they are saying that the maximum is perhaps 1,000 megawatts there and that they would start with only projects of less than five megawatts.

Ms. Hamrin: I think they do not have a particularly good basis for the statement. It is a function of cost. If you say, "I am going to pay a penny a kilowatt-hour," you may not have the potential for any megawatts. If you say that the other resources we would otherwise build might cost six, seven or eight cents, you may have the potential for 20,000 megawatts. There is a technical potential which I do not think has really been estimated.

One of the problems I had with the plan was that it seemed in this area to mesh together technical potential and economic potential. You could not tell where one left off. They say, "There is only limited potential for X because we do not think it is economic."

You may be surprised by what the economics are. The private sector has learned a lot in the last few years in these areas. They have built these projects and they may be able to build them quite effectively. If you do not have experience in it, I think you want to get experience rather than set arbitrary limits. To me at least, I did not get any data that indicated that the limits were anything but arbitrary.

Mrs. Grier: All right, but would Hydro not be justified in saying, "Because we do not have any experience, we would set fairly modest goals"?

Ms. Hamrin: Goals are separate, yes. You might say: "We are going out with a program. We would like to get 200 megawatts, 300 megawatts or whatever, in a certain period of time for this price." That is fine, but I think there is a difference between having your planning strategy say there is no more than 300 megawatts of this available anywhere, therefore we will plan to do something else, and saying we are going to experiment and see what shows up and then revise our plan based on that.

Mrs. Grier: Okay. Remembering our discussion yesterday of trying to get the difference between the strategy and a policy or a plan, if you were to write a strategic statement for Hydro in this area, how would you phrase it?

Ms. Hamrin: The interesting part of this was that the strategy—and this was one of the criticisms of the panel—was so general that you could not tell what the criteria would be for

differentiating between anything. On the other hand, in the area of independent generation, it was incredibly detailed in an area where they had even less information than in some of the others.

I would make up your mind. If you are doing a strategy, then I would have, in this area also, just had general principles—probably more specific than the general principles that were laid forward, but some modest goals, some general principles of things that you are going to do and not set absolute limits or make absolute determinations on the costs because you do not know what those are. Put a program in place that is a startup program that has limited megawatts, so you are not risking going out and having huge amounts of something at a price that turns out to be not realistic, but incrementally you set goals and then, once you have reached those goals, how you are going to move along.

You have a major credibility problem in that there is a tendency for us not to believe a utility really wants to give up building generation and hand it off to somebody else and, therefore, to feel that in fact it is going to develop a program that is going to discourage somebody else. This is not because they have bad people or they have anything of the sort; top management may really believe this is the way to go. People lower down in management or lower down in the company—I have seen it over and over—will say: “Yes. The company says that, but we know it does not really want to do that. We boys built the power and they really want us to build the power.” So programs get sabotaged.

The need for having it developed in a way that has some independent review, that there is credibility that the program really is designed to see if there is an industry that can be developed, I think that is extremely important. That means you do not have the utility deciding who it will deal with. You deal with your friends. I say: “I know her and I know him. I will negotiate with you two, but I do not want to talk to you guys because I have never met you before and I do not know what you will do.”

That does not necessarily get you economic efficiency or a wide range of projects. It is just human nature that that is the way it is going to go. Even if you did it as fairly as possible, the guy who is not dealt with then says: “What is wrong with me? What is wrong with my project? Why would the utility not choose to negotiate with me?” I think the project needs to be designed and have the appearance of being impartial and of really trying to develop the industry. I do not think that is what we had in front of us.

Mrs. Grier: I am sympathetic to the credibility problem because I am arguing, you see, that we need private enterprise and greater competition in this whole field. Sometimes on this side we have some credibility problems making that argument too. I empathize with that.

Let me ask one final question. The determination of avoided cost and how that gets determined, has that been an issue, how does it get decided in California and have you any recommendations as to how it might be determined here?

Ms. Hamrin: Yes, it is an issue. Huge amounts of time and resources are spent in arguing it. One of the big disadvantages or a problem with the program in California and a number of places is that we have made it very complex and given the impression that you can reach precision that you really cannot reach. We have people arguing assumptions after the fifth decimal point, when they do not have the data to support them. You know, round it off to the first. As a result, we spend three quarters of our time—and more and more expensive time—arguing these things.

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On the other hand, change in just one variable can make a huge difference in the avoided cost. Are you including the heat rates of all of these plants? Are you assuming plant X is always going to run, or do you only run it as a backup when you absolutely need it? Some items like that may change the price by three or four mills. As I said earlier, there is not an absolute truth of what avoided cost is, but what you try to get is some approximation of what you are really doing or what the utility would otherwise do.

I think you need an independent proceeding and you need to be very clear on what assumptions will or will not be included, and it has to be tied to long-term planning.

If you should decide that Ontario Hydro has enough generation resources of one type and, for the reasons of diversity and reliability, you want to diversify into something else, then you look at what the utility would do to diversify into something else if there were no independent producers there. Then that sets the price.

If you say, “I don’t want any more coal plants because we’ve got an acid rain problem, so I want to do something noncoal,” you do not use coal as the avoided cost, because that is not what you would do if you did not have independent producers; you would do something else. You need, again, to set your goals and know what your standard is going to be and be clear about it.

Then I think there are fewer things to argue about.

Where we have got into our difficulties is where the goals were not set ahead; so it appears you are arguing numbers when, in fact, you are arguing basic policy. Decide what your policy is, your long-term planning, what the utility would otherwise do in certain circumstances. It does not have to be out to the fifth decimal point, but make sure all the costs are included and you do not add things that are not justified to be in there. You can make it a little simpler than we have by being clearer up front on what you are doing.

Mr. McGuigan: You mentioned a number of times large boilers and gas. I am assuming, therefore, that most of these projects are fairly reasonably sized. They are not Rube Goldberg things in somebody's backyard.

Ms. Hamrin: Right. We have gas-fired cogeneration facilities connected with oil production and refineries that are in the 250-megawatt range. We have gas-fired generators associated with the food processing industry that are in maybe the 30- or 40-megawatt range. We have gas generation that is in small commercial, such as McDonald's burgers, that is 65-kilowatt. We have a really wide range of sizes, but gas cogeneration is the area that gets the largest. On the upside, it can go to fairly large sizes. There have been technical developments at both extremes, but particularly in the large size, that have brought the price down considerably. You can build some facilities for a fairly low cost.

Mr. McGuigan: You mentioned oil refineries. We have a number of them in Ontario. It always hurts me, especially at night, when I drive by these things and see these huge flare-offs. Is that type of waste gas being utilized?

Ms. Hamrin: Yes, it is. We are also using landfill gas, which otherwise becomes a health and safety hazard. There are a number of different fuels that are being used. The refineries use waste products; they use waste gas that was previously flared, a number of things.

Mr. McGuigan: There are two areas of efficiency. One is using waste products for the fuel; the other—and I would like to explore the other—is largely in the fact that private industry can build these places cheaper than can a utility.

Ms. Hamrin: There are a couple of reasons for efficiency. As you know, one is that if you are just generating electricity from a generator, you are dumping the waste heat. If you are doing an industrial process and you have a boiler for heat for your process, you are dumping the excess

steam or heat. Either way, those are not as efficient as if you combine them together. That is the purpose of cogeneration.

When you have industries which already have some kind of thermal plant for their process which can then convert that or which, when they build it new, generate electricity at the same time, you are doing two things with the same fuel. You have inherent efficiencies in that which you would not get otherwise.

You have that also in institutions. Hospitals are areas which use a lot of steam and heat, sometimes absorption chillers for cooling. They have a lot of processes where they need hot water or steam. They tend to run 24 hours per day and they are frequently excellent candidates for cogeneration. You are generating electricity while at the same time you frequently improve reliability for the hospital, because they replace some of their backup generators this way.

Second, the companies which go into this are frequently smaller and can sometimes build things more efficiently than the utility. Many of our utilities in the United States are very large, have been around for a long time and become sort of top-heavy; bureaucracy is not a lot different from other kinds of institutions.

You have new companies come in. One of the advantages of the program is that they only get paid when they generate and they get paid a price they have agreed to. The more efficient they can be, the more profit they will make. The incentive becomes one of efficiency in order to make a profit, where the utility does not have that incentive; they collect the money regardless. It really does put an incentive on companies to be lean and mean, so to speak, and build efficient projects.

Mr. McGuigan: Going back to someone who had a heating load in a boiler, I am not sure how correct my figures are, but say you were burning coal. I think somewhere in the neighbourhood of 65 per cent would be a good figure. You would get 65 per cent of the theoretical heat in the coal in your heat load and the other 35 per cent goes up the chimney or is wasted in one way or another. Reverse that process and you use the waste heat in the chimney and then you turn the other out for electricity. That is the way the system works, is it?

Ms. Hamrin: That is right.

Mr. McGuigan: I am just wondering if we have as many opportunities in Ontario on the heating load, in that we have extremes of summer and winter which you do not have in California.

You would have more of an even heat load there, even in a hospital.

Ms. Hamrin: I think your opportunities may be slightly different, but I think you would be surprised by how many opportunities there are. Many industrial processes and commercial processes require heat and steam year round for a process purpose. On one side, we are talking about a program to sell power to the utility; on the other side, you can look at a program to encourage people to generate for themselves. If all they are paying for electricity is two cents or three cents per kilowatt-hour, there may not be a lot of places where it would sense to generate their own electricity because they cannot do it cheaper.

We went from those kinds of rates up to 10 cents or 12 cents per kilowatt-hour really fast, in just a few years, because of a number of changed circumstances. When you start reaching six, seven, eight cents, there are all kinds of opportunities to generate power yourself or to sell it to the utility, everything from health clubs, which have it for showers, and for swimming pools and things of that sort to beauty parlours or restaurants.

Again, it is partly a function of price, either the price of the electricity you are displacing or the price you are going to sell it for. There are opportunities throughout the commercial and industrial sector, but they will not all be able to function at the same price. When there is a waste product, they frequently can generate at a lower price because, otherwise, they had some cost on that. I think you will find there is a lot of opportunity, more than you had anticipated.

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Mr. McGuigan: In those smaller applications, do they tend to go to boilers or internal combustion engines?

Ms. Hamrin: Internal combustion engines at the smaller applications.

Mr. McGuigan: They are easier to handle, available and so on.

Ms. Hamrin: Yes.

Mr. McGuigan: From your own knowledge of the industry in the United States, of those nuclear plants which are closed down and will never be finished, was it the errors or perhaps even intentional faults of the builders which contributed to that or were there other reasons those places were turned down?

Ms. Hamrin: I think a variety of things all happened at one time. In some cases, there were major errors of judgement. When plans were

turned upside down and backwards, that was a fundamental error in judgement. In other cases, when you reach a level of uncertainty of what your loads are going to be, but you still keep building in 1,000-megawatt increments, you have a big liability out there. All of a sudden you find that instead of growing at seven per cent, your loads are growing at 1.75 per cent and you do not need a 1,000-megawatt chunk.

Second, the costs are out of place. Where you had big debts being incurred by the ratepayers, it was costing more and more in capital they had to pay up front and they were not sure how those plants would function. If you can get the private sector to come in and build generation, pay for it and recover its costs as it sells you the electricity, it really shifts a big burden which had previously been placed on the ratepayers or the taxpayers from paying up front in one big chunk for very large generation.

I think it was the combination of shifts in load growth, the uncertainty of long-term planning, the escalating costs of big power plants and the uncertainty of the operation of the plants—once they got built, they still were not running quite the way they were supposed to—and the hidden costs they had not anticipated of decommissioning or fixing them or other kinds of capital improvements. You thought you were done when you paid the \$6 billion and then you found there was another \$3.6 billion in decommissioning and another \$5.1 billion in capital improvements. The public said: "Wait a minute. I think there's a better way of doing things."

I think all of those came together at one time. At the same time, you had regulatory commissions in the United States disallowing plants, just saying, "You made a mistake," or, "We don't think we need the power now, so we don't want to pay you for it," and utilities saying, "If you're going to be that way, we're not going to build anything more because we don't want to take that risk," which was legitimate.

A fundamental change in the way we are doing generation and a rethinking of whether there was and is a natural monopoly on the generation side or maybe developing a market-driven generation side makes more sense, given our current status.

Mr. McGuigan: I imagine you are talking rather specifically about plans which were upside down and so on. I was kind of interested because of the criticisms which have been made of Ontario Hydro. I have made these mentally myself when I visited one of the sites being put up. When you look around the construction crews, they are the top people. When they go into

an area with a project, they hire the very top construction people, and there are all sorts of their own people running around with Hydro hats on. Mind you, they were all working; I was amazed to find they were all working.

Mr. Runciman: They were all busy, anyway.

Mr. McGuigan: Yes. But in looking over the crew, there is nobody there who is, say, under 25 years old and there is nobody there who is over 50. They really take the cream of the crop. First of all, they drive any other construction out of the area. It just cannot compete. Then when they move out, there is a great vacuum. I think one thing you have to give them credit for is, when the plant is built, it is built. I do not think there is any criticism that anybody shorted, that the plant did not meet the specifications and so on. I just wanted to get that on the record, that there are pluses and minuses.

Ms. Hamrin: Right. I think in the United States the majority of the big power plants built by the utilities have been very well constructed. There are a lot of problems with them that were not necessarily the utilities' fault. Nevertheless, they are the realities of putting big power plants in place. A utility may be the best people in the country for building a 1,000-megawatt plant of a certain size, but if your long-range planning and your demand needs and supply requirements argue towards smaller plants and some changes in technology, that may not be the best expertise for doing cogeneration or a wind project or a small hydro project. They may be the very best at doing a big coal plant or a big nuclear plant.

Partly, it depends on what it is you need. Having some of the new experience in companies that we are developing, they are the best at building some of the smaller stuff. You may not want to build all of it that way, which is part of what the panel was trying to get over yesterday in the one chart. There is a place for a variety of sizes and technologies. For the big plants, the central plants of more traditional technologies, there may be nobody better than your utility to do that, but for some of the other technologies or smaller-sized things, there may be other companies that can do it as well or better.

Mr. McGuigan: Just one clarification. You mentioned putting a deadline for the production of the power at five years. What happens if a company is just a couple of months off? Is there any flexibility built into the program?

Ms. Hamrin: There are force majeure clauses in the contracts. If you are late because of an earthquake, a train derailling, they dropped your

turbine off the boat, something over which you had no control, then you may get additional time. But if you are late just because you did not get the project together, that is it; you do not have a contract. That is severe. Most of these projects are for millions of dollars. This is big industry. This is not tinkering-in-the-garage kind of stuff. You cannot afford to miss that deadline and, therefore, not have a market for your power; so companies are pretty careful to make those deadlines.

Mrs. Sullivan: I want to go back to the early 1980s. I wonder if you can describe to us where your private generators came from. Were they risk-taking entrepreneurs who were starting small operations, or were they indeed the GE's and the Bechtels who were coming in to participate in the industry as a new market opportunity?

Ms. Hamrin: They were not the GE's and Bechtels. For the most part, the GE's and Bechtels sat back and said: "Let's see what you can do. If this looks like it is actually going to work, we will come in later." They are coming in now, and a lot of the little companies have disappeared or have combined together. When we started, there were a lot of small firms. There were a lot of entrepreneurs who had been in real estate. They knew how to put business deals together. They knew how to do financing. They did not have a clue about technology.

There were a number of small companies that were headed by engineers who thought that a certain technology was the greatest thing and that was the way to go, but they did not know a whole lot about business. This was the weakness. We had people who really made good hardware decisions, good technical decisions, and they just did not know how to handle the business, the financing, at all. We had people who really knew that, and they made terrible hardware decision.

Fortunately, the two have got together, and the companies that have survived, that have built projects and come on line, have been successful. They now combine expertise from both or they do not live long. They have to have a business sense and understand financing and they also have to understand technologies and hardware. But they tended to be entrepreneurs who came in and were willing to take the risks.

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For the exceptions to that, as I mentioned earlier, one is the timber industry, where firms had other financial and economic reasons for really wanting to move into this field. They were some of the early ones, and some of the oil

companies. Particularly in doing geothermal in California and in Texas, there were so many opportunities for putting facilities in the refineries. They were so obvious and the payback was so good that they could build really very cheaply and come in even when avoided cost rates were fairly low.

The ??A and E firms were not the ones who started. They waited back and let it get proven out first.

Mrs. Sullivan: What then became the responsibility or the participation of the utilities in judging, for example, the financial viability of these new, emerging companies? From the way you have described it so far, you certainly were not a part of the failures. If they were going to fail, you let them fail. On the other hand, once you have committed a contract, and certainly if Hydro is committing a contract, we are talking about really a public as opposed to a private contract. So there is some concern about maintaining the viability of a new industry.

Ms. Hamrin: There are two different levels you want to look at. One is, will all the people who signed the contracts come on line and have generating projects? Early on in your program, I think, you need to allow for the fact that a number of projects will not materialize. Companies will get into it and they will not be able to get the financing and bring the projects in. Some may not be their fault. It may be that financial institutions are not willing yet to risk money on certain kinds of projects, and that is part of what you want to find out.

If you are saying, "We are going to go for 200 or 300 megawatts from this," and you put out contracts for 300, and 100 or 150 come in, as long as you have other options and it was not at a desperate time of need, that should not be a problem. If you say, "We need 300 megawatts, and we really need to be sure we have 300 megawatts," then you might issue contracts for 400 or 450, allowing for some percentage not developing initially and also allowing for the fact that if they all develop, you want to make sure that is not a catastrophe either.

The second area is, if they actually come on line—they get their financing, they build the project, they actually come on line—are they going to operate reliably? The experience we have had—and we are just finishing a reliability study in the United States—is that in California, according to Pacific Gas and Electric's testimony in the public utilities commission, firm capacity projects on line in PG and E are operating at a 95 per cent capacity factor. In fact, they complained

they are on line too much. "We do not want these guys here all the time." They are operating at a higher capacity factor than the utilities plan.

As available projects, PG and E says it is operating at a 60 per cent capacity factor. I cannot believe they are operating that high, because I do not think some of the intermittent resources have that high a factor. PG and E reports that the wind facilities are operating at about a 20 per cent to 25 per cent capacity factor. That is really quite good, given the intermittent quality of the resource.

The point is, if you get paid only when you operate, there is a real incentive to keep these things up and operating. The experience we have had is not just California. We have looked at plants in Texas. There were some cogeneration facilities in Texas that have been on line since the 1920s and 1930s. They are some of the oldest in the country. They also have operated at about a 90 per cent capacity factor.

Our experience has been that there is a real dropout rate when the programs are new because of the difficulty of financing, the difficulty of permitting, all those things that they have to go through. You lose a certain number, but once the projects get on line, they appear to operate very well.

In our last proceeding, last year at the public utilities commission in California, we had a data request of the utilities. How many projects have failed after they came on line? Of 730 projects, they said there were three, and it was not absolutely clear that they were not going to generate; they had stopped generating and they were negotiating with them.

It has not been a problem yet. You want to be sure you do not design your program to be a problem. I agree with Mr. Litchfield on the value of scenarios. Is there a scenario which would cause any large segment of the generation to stop generating and not also drop demand? You do not want all your eggs in one technology basket or one fuel basket; you would not want all your generation to come from oil refinery cogeneration. Oil refinery cogeneration, just as an example, is wonderful, but if something happens to the oil industry, you would lose it all, but you would want some percentage of it.

In general, we have found they are very reliable once they are on line, but in the startup phase, you will not get everybody on line because there are too many things they have to deal with that just do not work out. So you design the program accordingly.

Mrs. Sullivan: On the financing side, with the startup industries or companies that were entering parallel generation, did they get their financing from public markets or from pension funds or from venture capitalists, or were they just going anywhere—grandmother and grandfather? What were they doing?

Ms. Hamrin: In the early years, the tax credits in the United States did make a difference. Because there was no experience with some of the technologies, conventional financing institutions were not willing to provide financing; so they went to venture capital markets and to private placement memoranda, general partnership types of financing.

Seven or eight years later, we are seeing pension fund moneys much more commonly used, insurance companies investing in these projects and conventional banks investing in the projects. It varies by technology, and technologies such as cogeneration are well known, well understood and are much easier to finance and less capital-intensive. The renewable energy technologies are more difficult to finance; there has not been as much experience. It does vary, but you see it shift to more traditional financing as we go along.

I might also mention, do not confuse ownership of a project with the success or reliability of the project. The project may change ownership, companies which originally built the project may go out of business, but if the projects generate, if it was designed and is functioning as a generating project, somebody else will take it over. From the ratepayer and taxpayer viewpoint, you do not care as long as they complete their contract. We have had companies go bankrupt and companies go out of business and facilities change hands, but we have not had facilities—

Mrs. Sullivan: Your bankruptcy laws are very different from ours, though. As a consequence, if ours are gone, they are gone. You have an opportunity at least to recoup—

Ms. Hamrin: But if you have a multimillion-dollar facility sitting there, somebody is going to run it. The utility will run it if nobody else, if it can generate electricity and has been doing that. That is not to say that you may not have a shake-up in the companies, which you will have—some will be good and some will not—but if they are successful in putting a project on line and that project is a successful generator, it will continue to generate.

Mrs. Sullivan: When they are operating, now that they are on stream, do they get any state or federal development aid?

Ms. Hamrin: No.

Mrs. Sullivan: How about tax incentives such as capital cost allowances and so on?

Ms. Hamrin: Initially, there were tax credits. Those have been almost entirely phased out. There have been some research and development money and tax benefits which have continued on the solar electric side because that industry is not yet competitive from an economic standpoint for solar electric, but they have phased out most of the other tax credits. They were absolutely crucial, not for the cost-effectiveness so much as just getting financed in the early years.

Mr. Chairman: Could I just clarify something in my mind? Were the small projects able to issue tax-free bonds?

Ms. Hamrin: No. If they invested in a wind project, say, they got some tax credits on that investment. It might be that 15 per cent of the investment could act as a credit against their other tax liabilities, that kind of thing.

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Mr. Chairman: So the small projects were not able to issue municipal bonds?

Ms. Hamrin: No.

Mr. Chairman: Are the utilities able to do that?

Ms. Hamrin: Yes, but I will say that a municipal utility could issue municipal bonds to build facilities, but then they are not independent generation as I define it. It would be a municipal generation project.

Mr. Chairman: I guess what I am getting at is the small projects did have a different cost of money to what the public utilities would have, did they, because the public utilities could use a tax-free bond and the small ones could not?

Ms. Hamrin: That is correct.

Mr. Chairman: And yet they were able to compete.

Ms. Hamrin: Therefore, you have not seen as many projects built in the area of municipal utilities. There has been much more in the area of investor-owned utilities that do not have those tax benefits.

Mr. Chairman: So the investor-owned ones cannot.

Ms. Hamrin: The investor-owned utilities still have benefits beyond what private sector businesses usually have. Investor-owned utilities, theoretically, pay taxes, but most of the time they have credits that they are running out for the next seven years. They sort of collect phantom

taxes, but they have not paid them in a while. That is calculated into the costs and so it has been more cost-effective to build the projects where there are investor-owned utilities.

As municipal utilities at times change, there are not as many opportunities for municipals to get bonding authority—there may be limits reached on that—and other sources of lower cost-power, which municipal utilities had for a long time in the United States and which has started disappearing. We are moving into a phase where you are seeing more activity in that area now, but we did not see it there initially.

Mr. Passmore: This is a bit of a follow-up, actually, to the type of questions Mrs. Sullivan was asking. There is an ongoing discussion in Canada about the reliability of private power production and the risks involved in overreliance on independent generators; yet you have told us that there are 5,200 megawatts in California and that is 12 per cent of electric generation and that 100 per cent of new generation is coming from these independents. I have the impression that California is a fairly prosperous place. Am I wrong or are California utilities suffering as a result of this independent generation? Are California ratepayers suffering as a result of this 100 per cent reliance?

Ms. Hamrin: I do not think they are suffering at all. We do some hindsight things. The prices paid for some of this power ended up being a little higher than the utility could pay today, given the low cost of gas. Some of the debate you will hear has to do with the long term versus the short term, but if you look at the life of the project, of the contract, over 30 years it was less expensive than anything else the utility was looking at at the time.

I think what is important is to compare independent generation with what else the utility could do at that time and make your decisions. Then do not try to go back and do something different later. If the utility was planning a coal plant, which is what they were doing in California, at 12.5 or 10 cents a kilowatt-hour, and they ended up with electric generation that is averaging 5.5 cents a kilowatt-hour, because we pay out in slightly different streams, then that is a good deal. The fact that you can do some gas generation now for 3.5 cents a kilowatt-hour is really irrelevant because that is not what the option was when these contracts were signed and five years from now that might not be the best option again. It is part of the mix, but you look at what your other options are then and that is what you make the decisions on because, otherwise,

utilities commit to something else; they would commit to that coal plant and the ratepayers would have been paying the 12 cents per kilowatt-hour.

Mr. Passmore: You would have had the 12 cents per kilowatt-hour irrespective of this.

Ms. Hamrin: That is right.

Mr. Runciman: It is really along the same line. I was struck by a comment Carl Beigie made yesterday that when one of his friends heard that he was going to be part of the technical panel, he said, "Just make sure you do not do anything that is going to impinge on my ability to go to the wall, turn the switch on and the electricity is there."

I guess we know, or we suspect, that in California there is more of a free enterprise mentality down there and in Canada, regrettably in some respects, there is more of a "Big Brother knows best" approach in a lot of things. I am wondering if there has been any resistance. You have the opportunity in California for propositions on the ballot. Has that ever occurred? Has there been any concern or resistance about an increase in percentage of your needs coming from private power options?

Ms. Hamrin: No. The interesting part is there has not been criticism from any ratepayer group. The criticisms have been from the utilities themselves, which have said, "Look, we could have bought power cheaper now than before." The ratepayer groups such as Towards Utility Rate Normalization, headed by Sylvia Segal, UCAN and some of those have said, "This is a much better deal than what the utility was going to do. We are better off and we have stabilized our rates." We have had very strong ratepayer support. The debates have still continued between utility and nonutility, but it has not been with ratepayers.

Mr. Runciman: The security supply question has not been a major issue down there.

Ms. Hamrin: It has not been an issue at all among the public. It is brought up regularly by the utilities, but utilities more and more every place are going to purchases because of the difficulties of building plants. They purchase from their neighbouring utility and it is not much different. It is a contractual arrangement that is made. The interesting part is that about 10 years ago the utilities said: "This does not make any sense. There is not enough of it anyway. It will not work and nobody wants to do it."

Today really the argument is that they want a piece of the action. What you are seeing is more

and more of the electric utilities forming nonregulated subsidiaries to go into the business of building independent power facilities to sell back to the public. It is back to market share and who is going to win in the game of competition rather than real issues of reliability of the power.

Mr. Runciman: I still suspect it is going to be a tougher sell in this environment.

Ms. Hamrin: I would not be a bit surprised and that is why I would be very clear on what the goals are, the programming structure, and set it out and move along in increments. It is just that in limiting it (1) I would have policymakers, decision-makers or an independent panel decide where the limitations would be and (2) I would base them on the ability to gain information from a variety of sources and then move on to the next level rather than just limiting it for some other reason. I think if you are careful and clear about what you want to do and how you want to do it, you can design it and step into it in a way that will have public support.

Mr. Chairman: Any further questions? I understand, Dr. Hamrin, you have to catch an airplane to California.

Ms. Hamrin: All of your people here go running off to airplanes.

Mr. Chairman: I suppose part of what keeps us going is charging off to the airport. It keeps the taxi industry active anyway. I would like to thank you for taking the time to appear before us. You have given us some insights into what has gone in California and perhaps exposed or shown to us another way of generating electric power. We thank you very much.

Ms. Hamrin: I thank you for inviting me. I have enjoyed it and I always learn as well. I think you have exciting opportunities ahead of you. I think you will have a good strong program because of your willingness to get a lot of perspectives. I think that is up front rather than after the fact.

Mr. Chairman: We appreciate your coming before us to give us one. Thank you very much. I will adjourn the committee until 10 o'clock tomorrow morning.

The committee adjourned at 4:09 p.m.

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Select Committee on Energy

Electricity Demand and Supply



First Session, 34th Parliament

Wednesday, September 14, 1988

Speaker: Honourable Hugh A. Edighoffer

Clerk of the House: Claude L. DesRosiers

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LEGISLATIVE ASSEMBLY OF ONTARIO

SELECT COMMITTEE ON ENERGY

Wednesday, September 14, 1988

The committee met at 10:11 a.m. in room 228.

ELECTRICITY DEMAND AND SUPPLY (continued)

Mr. Chairman: I call the morning session to order, please. I ask everyone to take their seats.

This morning we are going to be hearing from the representatives of various ministries on the review by government ministries of the demand/supply planning strategy. Mr. Jutlah, I believe you are chairing the panel, so perhaps I can turn the floor over to you and ask you to introduce your panel for the benefit of Hansard. I understand you have a presentation.

Mr. Jutlah: That is right.

Mr. Chairman: If we could go through that, we will have questions after that.

MINISTRY OF ENERGY

Mr. Jutlah: Let me begin by introducing the panel representing the Ministry of Energy. Larry Moore, on my immediate left, is the co-ordinator of electricity planning policy. Dr. Moore has broad responsibility for electricity planning and electricity conservation. He served on secondment to the last select committee on energy and recently facilitated the work of the Electricity Planning Technical Advisory Panel.

Rick Jennings, on my immediate right, is a policy adviser in the policy development branch. Mr. Jennings has held responsibilities for the ministry's work in energy forecasting and in energy and economic analysis. Prior to joining the ministry, he served with the Royal Commission on Electric Power Planning; that is, the Porter commission.

On the extreme left is Tony Rockingham, who is a program supervisor in the programs and technology branch. Dr. Rockingham has been involved in program design and evaluation and in the analysis of energy supply systems. He, too, served with the Porter commission prior to joining the ministry.

I am Cliff Jutlah, manager of the electricity section. This unit is responsible for the planning and development of broad strategy and policy relating to electric power.

The ministry was pleased to be invited to participate in this important hearing. With your permission, we would like to give a prepared

presentation, following which we will be happy to respond to questions that committee members may wish to raise. Copies of our presentation have been made available.

The purpose of the ministry's presentation is threefold: to outline the province's electricity policy as a context for the review of Ontario Hydro's draft demand/supply planning strategy, more properly known as DSPS; to provide the ministry's perspective on the draft strategy; and to provide information on the ministry's programs for energy efficiency and technology development. These topics will be addressed by Larry Moore, Rick Jennings and Tony Rockingham.

However, first I would like to take a moment to refer to the background material provided by the ministry. As members know, the Ministry of Energy is responsible for providing advice to the government on energy policy issues. Its objectives are to ensure that an adequate supply of energy is available at reasonable cost to consumers and with minimal environmental impact, to promote conservation and efficiency of energy use, and to encourage energy research and development for new energy sources and technologies.

In keeping with its mandate, the ministry has a responsibility for developing policy on electricity planning matters. Ontario Hydro, in turn, is expected to plan its activities within the framework of government's public policy objectives, including those relating to energy.

Upon release of Ontario Hydro's draft demand/supply planning strategy, the ministry initiated a co-ordinated government review of the proposed strategy. The aim was to obtain an assessment by ministries of the appropriateness of the draft strategy with respect to their specific mandates and responsibilities.

The exercise produced a report entitled Review by Government Ministries of Ontario Hydro's Draft Demand/Supply Planning Strategy. As members will recall, this report was tabled with the committee in early August. It describes the potential impacts of the draft strategy on the broad spectrum of public policy.

The ministry considers the government review to be an important part of the overall review of the planning strategy. We believe that Ontario

Hydro will find it useful as it proceeds to develop more specific plans for the electricity system.

The ministry has also made available to the committee's staff six studies dealing with a range of options for meeting our future electricity needs. We commissioned these studies over the past two years to enhance the information base on planning alternatives and to draw on the expertise of independent analysts. In all cases, we have shared the results with Ontario Hydro staff and made the reports available to the public.

Specifically, the six studies are: Natural Gas as an Electricity Generation Option, by Blue Apple Consulting; Electricity Conservation Supply Curves for Ontario, by Marbek Resource Consultants; Coal Combustion Technology Study, by Stone and Webster Canada; The Economic Impacts of Purchasing Electricity, by Data Resources of Canada and Acres International; Canadian Electricity Exports, by Arthur D. Little of Canada; and Co-generation Potential in Ontario, by Acres International.

We hope that these reports will be useful to the committee in its deliberations. Should you have any questions on them, ministry staff present here today will be happy to assist.

With these introductory remarks, I now wish to move on to the main presentation. Larry Moore will outline for you the key components of the province's electricity policy. This will provide a context for the ministry's review of the draft demand/supply planning strategy.

Mr. Moore: I have a brief statement on the review of Ontario Hydro's draft planning strategy and Ontario's policies relating to electricity. This statement is intended to provide a context for the ministry review of Ontario Hydro's draft strategy.

The ministry received the two-volume draft demand/supply planning strategy in December 1987, and since that time intensive reviews have been conducted. The minister provided you with copies of the reviews of the technical advisory panel—of course, you have now heard from it directly—and by government ministries; we are doing part of that job today. These reviews are also being considered by the government and by Ontario Hydro. One of the panel's recommendations that is being acted upon is the independent review of the cost of future Candu power stations in Ontario. All of the panel's recommendations are under review. The final review of DSPS is the committee's.

The ministry is expected to provide the government with guidance on what decisions are necessary to ensure Ontario's future electricity

needs are met. We, in turn, must depend largely on the reviews of DSPS for guidance.

Once your review is complete, the next step in the process is the submission by Ontario Hydro of alternative system development plans, including a preferred plan, by the end of May 1989. These plans will reflect Ontario Hydro's interpretation of the reviews of DSPS and guidance given Ontario Hydro by the government. This guidance will be based on the present three reviews of DSPS and on past reviews and independent analysis conducted for and by the ministry.

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The minister, in his earlier speech to you, discussed three basic criteria for Ontario's energy supplies. These criteria are long-term security, reasonable cost and environmental compatibility.

When you look at the options available to meet Ontario's future electricity needs, one option stands out on all three counts. That option is electricity conservation. It is secure because efficient equipment, once installed, will always use less electricity than inefficient equipment. It is cost-effective because there are thousands of megawatts of conservation available for less than the cost of new supply. It offers environmental protection because it can reduce emissions and it avoids the land, water and air impacts that a new supply option would have. Conservation also leads to improved industrial competitiveness and job creation in Ontario and will reduce Ontario's energy bill.

Our policy related to electricity conservation is clear. Conservation is not just a priority, but rather the priority in planning to meet future electricity needs. We are working with Ontario Hydro to increase the speed at which the conservation resource is captured.

The specific roles of government in electricity conservation are to provide a policy framework for Ontario Hydro planning, to provide a regulatory framework for conservation and to facilitate and co-ordinate the actions of Ontario Hydro and others that implement major programs. Ontario Hydro, on the other hand, has the responsibility to assist consumers to use electricity wisely and to implement electricity conservation and load management programs.

In addition to conservation, independent generation does well when judged against the three basic criteria of security, reasonable cost and environmental compatibility. This option offers diversity and increases planning flexibility. Independent generation also encourages the

more efficient use of indigenous resources, fosters the development of a new industry in Ontario and can offer power where it is needed with short lead times. The ministry has a long-standing policy of actively supporting small hydro and other forms of independent generation.

Hydroelectric power, purchases and generation using nuclear or fossil fuels are Ontario's large-scale supply options. Our policy is that all of these options are to be kept open as long as possible. Actually choosing from among these options will require an examination and a weighing of a whole range of tradeoffs. The overhead shows these tradeoffs that must be considered. Decisions based on these tradeoffs are ultimately the responsibility of government. We depend, though, on information from independent studies, the reviews of DSPS and material provided by other ministries and by Ontario Hydro.

In summary, our electricity policy is founded on electricity efficiency. We also are actively encouraging independent generation and are intensively examining the tradeoffs the other options entail.

Mr. Jutlah: Against this backdrop, Rick Jennings will now provide you with the ministry's comments on the draft demand/supply planning strategy. I would like to stress that these are the comments of the ministry, not those of the entire set of ministries. We are dealing specifically with the commentary of the Ministry of Energy.

Mr. Jennings: I will be presenting today highlights of the review of Hydro's DSPS by staff of the Ministry of Energy. The ministry's review is structured in eight sections. The first section comments on the general strategic principles of the draft strategy. The second one deals with general electricity system issues such as reliability, diversity and flexibility. The third section deals with the need for new resources and focuses on electricity demand forecasts. The next four sections deal with alternative ways of meeting those needs: electricity conservation, independent generation, new supply options and purchases. The last section examines the link between the representative plans and the draft strategy.

I will now be presenting our overall comments on strategy and the major conclusions of the ministry review.

In the draft strategy, Ontario Hydro is for the first time integrating demand-side and supply-side planning into an overall strategy and

ultimately into a plan. The ministry supports Hydro's efforts to treat demand-side and supply-side options on an equal basis for planning purposes. The ministry is particularly supportive of Hydro's decision to voluntarily submit the draft DSPS to government and public review.

Several key electricity planning issues are dealt with in our review. These include: flexibility, reliability of supply, diversity and long-term security, transmission, and environmental approvals.

Given the uncertainty of future electricity demand and the long lead times for building new large-scale capacity, flexibility is very important in system planning. While Ontario Hydro has dealt with flexibility in several strategic elements, the ministry believes that flexibility is an important enough consideration in planning to be included as a strategic element on its own.

Reliability of supply is important for consumers and a high level of reliability must be a key strategic element of planning the electricity system. Reliability needs to be maintained. The ministry encourages Hydro to review the cost-effectiveness of the current planning reserve margin versus changes that can be made elsewhere in the system.

The value of diversity of supply as an alternative to increasing dependence on nuclear should also be examined. Fuel diversification, while not without costs, could enhance the overall security of the Ontario electricity system.

Transmission issues are not dealt with in detail in the draft strategy. Limitations of the transmission system could constrain the availability of supply options. The ministry expects Hydro to bring forward transmission plans as an integral part of generation system proposals.

The ministry is co-operating with the Ministry of the Environment and other ministries and agencies in reviewing the current environmental assessment process. Until this review is complete, Ontario Hydro should plan the system based on the existing approvals process. In particular, Hydro should plan on the basis that the next large-scale central generating station it proposes will undergo a full environmental assessment, including public hearings.

Ontario Hydro's load forecast establishes the need for new demand-side and/or supply-side resources. We concur that for a plausible range of electricity demand outlooks, new options for demand management or electricity supply will be needed before the end of the century.

The ministry's latest forecast, entitled Ontario's Future Electricity Demand, was published in

July 1987. For the period 1985 to 2000, the report contained several electricity demand growth cases with average annual growth ranging from 1.4 per cent to 3.4 per cent. The reference case was for an average annual growth of 2.3 per cent.

Growth is expected to be higher in the near term but lower in the 1990s as the rate of economic growth slows. Ontario Hydro's 1987 load forecast—the most likely case—is for 2.8 per cent a year growth over the 1986 to 2000 period. Hydro expects demand management measures to reduce this growth rate to 2.6 per cent. The ministry agrees that Hydro's most likely case is within a range that is reasonable for planning purposes.

While Ontario electricity demand growth for the last five years has averaged over four per cent a year, this has been driven by provincial economic growth of almost six per cent a year. Ontario's economic growth is likely to slow to a more sustainable long-term growth rate and electricity demand is likely to continue to grow at a significantly slower rate than economic output. As part of the ministry's regular planning process, we are reviewing recent experience and preparing a revised forecast.

The uncertainty range encompassed by Hydro's upper and lower cases is quite wide. In our view, the probability that peak demand by the year 2005 will be between 20,000 megawatts and 45,000 megawatts is much greater than the 60 per cent probability estimated by Ontario Hydro.

The ministry has set out its policy direction on electricity conservation, energy conservation and efficiency in a September 1986 energy policy paper, *An Energy Efficient Ontario: Toward the Year 2000*. The paper stated that electricity conservation and efficiency will be the major priority in planning to meet the province's future needs for electricity services; a major strategic objective of demand management will be to extend the amount of time before Ontario needs new generation; and the objective of demand management programs is that electricity services should be supplied at the least total cost to society, including taking due consideration of environmental and social costs.

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We welcome the strong emphasis given to demand management in the draft strategy; 22 out of the 52 strategic elements deal with it. Hydro, through its draft strategy, is displaying a strong commitment to designing, testing and implementing programs to encourage greater efficiency of electricity use, cost-effective conservation

and the most efficient provision of the customer's requirements for electrical service.

The ministry, however, is concerned that some aspects of the strategy could prevent the full economic potential of demand reductions from being realized. We suggest that:

The use of demand-increasing options should be minimized. Such measures are inconsistent with other elements of the strategy, can advance the need for new supply and will make it difficult to rapidly switch from marketing electricity to effectively promoting conservation.

Early and extensive implementation of efficiency improvement options should be a high priority and would reduce uncertainty about their potential.

The financial grants criteria cited could significantly limit the level of economic efficiency improvements that are achieved. In particular, Hydro should not, a priori, rule out paying incentives up to the full cost of the demand reduction measure.

The widest possible implementation of time-of-use rates should be pursued.

The ministry notes that some of these concerns have been alleviated through subsequent reports by Hydro. These include the new corporate initiatives and the corporate strategy for the 1990s. Ontario Hydro also prepared, at the request of the Minister of Energy (Mr. Wong), the plan for electricity conservation and efficiency measures. The plan confirms that Hydro's target for strategic or incentive-driven conservation by the year 2000 has been raised from 1,000 megawatts to 2,000 megawatts and that efficiency-improving activities have been moved forward by up to two years from previous plans. The minister has, however, expressed disappointment that under this plan Hydro's estimate of total electricity conservation likely to be achieved through both Hydro programs and by customers on their own is little changed from previous estimates.

The ministry strongly supports the expansion of independent generation in Ontario and has taken several initiatives to encourage independent generation. We welcome the emphasis given to independent generation in the draft strategy and Hydro's subsequent commitment to a target of 1,000 megawatts of parallel generation by the year 2000.

The ministry believes that rates for independent generation should reflect fully the value of the power to Ontario's electricity system, including the cost of adding new generating capacity. We suggest that Hydro establish standard con-

tracts for independent generation with rates that reflect this principle. The rates and conditions of the contracts should not differentiate between independent generators on the basis of the fuels or energy sources used to generate electricity.

We are working to create an environment that will maximize the contribution of economic independent generation.

The ministry has urged Ontario Hydro to continue to take steps to keep the major supply options open. In particular, we support the maintenance of the Candu nuclear option so that it will be available for future development. Candu plants have provided Ontario with reasonably priced supplies of electricity at lower costs and environmental emissions than coal-fired stations.

Candu plants have operated at a high level of safety. This was reflected in the conclusions of the Ontario Nuclear Safety Review.

However, with regard to nuclear power, there are some areas of the draft strategy which we feel could be strengthened. Steps needed to maintain the Candu option could be explained. Hydro needs to place a high priority on reducing the uncertainties and the costs of retubing, decommissioning and spent-fuel disposal. Hydro should present more information to explain the nuclear cost estimates and to clarify the range of cost sensitivities used in analysing the representative plans.

With respect to coal-fired stations, the ministry supports the strategic element of monitoring the development of new, flexible, clean-coal technologies. However, we believe that demonstration and commercialization work on clean-coal technologies needs to be done in Ontario to gather cost and environmental impact information and to place Ontario Hydro in a position to be able to quickly put such capacity in place if required. The strategy should also deal with the option of increasing the use of low-sulphur western coal.

Ontario Hydro in its draft strategy has supported the orderly development of hydraulic sites to smooth the flow of work. The ministry would like to see hydraulic development principally driven by economics and system requirements.

The ministry views major power purchases from other provinces as a significant option and supports stronger interconnections with other provinces. Competitive price and supply security will be crucial factors in determining the government's view of a proposed purchase.

As part of its review of demand/supply options, the ministry commissioned a consulting study by Data Resources of Canada entitled *The Economic Impacts of Electricity Purchases*. This study estimated that the impact on Ontario of purchasing electricity instead of building generation capacity in Ontario could be significant in terms of forgone jobs and output over the full period examined. That was from 1986 to 2010. The impact, however, would be small relative to the size of the Ontario economy.

Nevertheless, the ministry believes the purchase option is worth examining carefully because of potential benefits such as increasing diversity of supply and low environmental impact in Ontario. The size of the potential resources is such that the government and Ontario Hydro should take all reasonable steps to keep the purchase option open. This would be in keeping with the government's view, as expressed by the Premier (Mr. Peterson) in Atikokan, that we should have an energy policy that meets the needs of Canada first. Strong interconnection of the electricity systems of neighbouring provinces would enhance Canadian energy security.

In summary, the ministry is supportive of Hydro's efforts to integrate demand-side and supply-side planning and Hydro's decision voluntarily to submit its strategy for review.

We concur with the importance Hydro has placed on reliability, flexibility and the approvals process. The ministry recommends that Hydro review its current planned reserve margin, give greater emphasis to flexibility in assessing technologies and continue to plan on the basis of the current approvals process.

The ministry believes Hydro's forecasting process and methodologies are appropriate and concurs that the most likely case is a reasonable basis for planning. However, we suggest that Hydro review its estimated uncertainty band.

While the ministry is pleased with the emphasis given to demand management and independent generation, we are concerned that certain aspects of the strategy could prevent the full economic development of these resources.

The ministry generally supports the supply aspects of Hydro's strategy, particularly with regard to maintaining Candu nuclear as a supply option. However, we suggest that more information should be provided on Hydro's nuclear cost estimates, a priority should be given to reducing cost uncertainties and development work on clean-coal technologies should be undertaken.

The ministry suggests that the government and Hydro take all reasonable steps to keep the purchase option open.

Mr. Jutlah: Tony Rockingham will now give you an overview of the ministry's involvement in energy efficiency and technology development activities.

Mr. Rockingham: Good morning. As Cliff Jutlah stated earlier, the ministry's objectives are to ensure that an adequate supply of energy is available at reasonable cost to consumers and with minimal environmental impact; to promote conservation and efficiency of energy use; and to encourage research and development of new energy sources and technologies.

The ministry, therefore, deals with the total energy picture. It monitors developments associated with the supply and more efficient use of all energy forms. Staff maintain an up-to-date awareness of energy technology developments around the world and provide advice to the government and the private sector on these developments. Ministry programs assist in these areas.

Ministry programs also provide a focal point for discussions and liaison with energy users in the province. The ministry has a range of programs and projects that assist energy consumers to improve the efficiency of their energy use, to make greater use of renewable and indigenous energy sources and to diversify the energy mix in Ontario. I will briefly describe the goals of these programs, the principles the ministry uses in developing programs and the programs themselves. I will also describe the Energy Efficiency Act and the activities under way that are related to that act.

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The ministry's programs are designed to achieve the following goals: Energy efficiency should be a key consideration when investments are made in Ontario; consumers should retain an awareness of the importance of choices regarding energy; the industrial and commercial infrastructure should support the development and use of more energy-efficient and energy-sustainable technologies; and a mix of fuels and fuel supplies should be available for each sector in the economy.

The government applies the following principles in developing its programs. The government acts as a facilitator. In particular, the government concentrates on removing barriers that prevent desirable changes in the supply, mix or use of energy from taking place. Such barriers include lack of information, lack of technical expertise,

market-entry difficulties for new technologies or fuels, regulatory obstacles and lack of access to capital. The programs recognize that energy prices generally determine the pace of changes to the energy mix in Ontario. Government assistance is selective. The government will direct its efforts to the sectors and energy uses which have the potential to become economically viable in the marketplace.

Ontario should further reduce its dependence on oil. The province's energy security could be enhanced by increasing efficiency and fuel diversity, especially in the transportation sector. The government promotes energy efficiency by providing information to specific groups of consumers. The government emphasizes long-lasting improvements in the structure of Ontario's energy use. The government supports research and development of new supply and technologies and more energy-efficient technologies. The Ministry of Energy provides leadership and co-ordinates Ontario's strategy for energy efficiency. The ministry co-operates closely with equipment manufacturers, energy suppliers, associations of energy users and other governments.

I will now describe the current ministry programs. I have grouped the ministry's programs into three major areas: energy technology development, industrial programs and programs for residential, commercial and government sectors. Details of individual programs can be provided, if these would be of interest to the committee.

With regard to energy technology development, the ministry currently operates the EnerSearch program to assist private sector companies with research, development, testing and initial demonstration of innovative energy technologies. Projects considered for funding under EnerSearch must have the majority of their funding from private sources. Funds are also available to universities for mission-oriented basic research. This funding is intended to assist universities to develop projects to the point where private sector funding can be solicited.

The industrial programs include industrial energy service programs which provide comprehensive audits of onsite specific equipment and processes and follow-up assistance for feasibility and engineering design studies; parallel generation programs, such as the energy from waste program, the northern wood energy program, the small hydro program and development activities for other renewable energy sources and co-generation; and technology transfer activities,

such as technology demonstrations and seminars, studies and publications.

In the programs for residential, commercial and government sectors, the ministry produces a number of reports and brochures to provide information and advice to home owners on energy-efficient technologies and practices. The ministry also provides information and runs seminars and workshops to promote better energy management among building owners and operators. Programs directed to municipalities have offered advice, technical assistance and limited financial assistance to improve the energy efficiency of buildings and equipment.

The ministry also works with vehicle fleet owners, associations and manufacturers to improve the efficiency of vehicle fleets and to encourage the use of alternative fuels such as propane and natural gas.

The Energy Efficiency Act was introduced into the House on December 16, 1987, and received royal assent on June 8, 1988. The act provides the government with enabling authority to make regulations and to provide penalties for noncompliance. The act prohibits the sale or lease of certain appliances or products not meeting the prescribed efficiency standards set out in the regulations.

The ministry is currently working with recognized standard-writing organizations to develop standards in conjunction with manufacturers, industries, utilities, other government agencies and consumers. Regulations will be developed when standards have been put in place.

The extent of the energy savings in Ontario resulting from the Energy Efficiency Act will depend on the standards developed and used in the regulations. The act will provide a means of ensuring that adequate information is available for the consumer to make informed decisions about future appliance and furnace purchases.

The information made available as a result of the act will also be important for the incentive-driven programs that are now being developed by Ontario Hydro and other agencies and companies in Ontario.

I should also add that the Ministry of Energy is also working with the Ministry of Housing to update the building code to ensure that new housing incorporates economic levels of insulation and energy efficiency.

Mr. Jutlah: That concludes our prepared presentation. We will be happy to respond to question by members of the committee.

Mr. Charlton: Perhaps we can start with this whole question of expressed disappointment on the part of the ministry.

I think all of us were pleased to hear the minister say in his statement to the committee some weeks ago that he was somewhat disappointed in the changes in the numbers in the DSPS document in terms of, specifically, conservation. We are also pleased to see the interest expressed by the ministry in parallel and independent generation.

Unfortunately, it is still not very clear to us precisely what the ministry is prepared to do to ensure that that disappointment can be erased and that we can see the numbers realistically changed in whatever plan is finally approved for actual action. Perhaps you could tell us just a little bit about what the ministry is going to try at this point and how far the ministry is prepared to go to ensure that if we are falling short now, we do not fall short in the final analysis.

Specifically, if you turn to page 17, where you have a statement that says, "While the ministry is pleased with the emphasis given to demand management and independent generation, we are concerned that certain aspects of the strategy could prevent the full economic development of these resources;" what specifically is the ministry prepared to do to see that those elements of the strategy that may cause those kinds of things to occur are changed or eliminated so that we have done the job of barrier removal?

Mr. Jutlah: With respect to the first question relating to the minister's reaction to the Hydro plan for conservation, I think the minister would be the most appropriate person to respond to such a question. If we were to go back to what the minister said before this committee, one could understand that, given the level of conservation which Ontario Hydro is looking at for the year 2000, compared to what it had suggested in its earlier analysis, the difference is quite small, something on the order of 200 megawatts.

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Furthermore, when one looked at the numbers relating to the short term, it seemed that only a small part of the conservation target could be attained. About one third of the total amount indicated for the full period to the year 2000 was indicated as being targeted for the next few years. In relation to the total size of the system, 1,800 megawatts is fairly small.

One would expect that Ontario Hydro would take another look at these numbers and proceed to refine them on the basis of new information, new knowledge, and try to accelerate the conservation thrust.

Perhaps I might ask Mr. Jennings to say something in relation to the ways in which things

such as parallel generation might be affected by the DSPS.

Mr. Jennings: What I would like to discuss in terms of what was in Hydro's conservation plan, and I think we mentioned it in our remarks, is that we are encouraged by the fact that Hydro, in terms of strategic conservation, it is now planning to achieve 2,000 megawatts, which is up from the 1,000 megawatts it was planning before. Where there is disappointment is that their previous estimates were that 3,000 megawatts of natural conservation, which is what people would achieve on their own, would be achieved by the year 2000; they are now estimating that would be about 1,500 megawatts. Thus, total conservation from those two measures is actually now estimated to be slightly smaller. I think that is the area where the disappointment expressed by the minister lies.

Those numbers, the natural conservation numbers, are pretty fuzzy numbers. They are numbers based on their estimates from looking at their forecasts and looking at what would happen if efficiency did not change. But I think the disappointment expressed by the minister came from the fact that that total had not increased rather than because of Ontario Hydro's activities. We do acknowledge that it does now have firm targets and has increased those targets.

Mr. Charlton: I hear what you are saying, but it does not really tell the committee very much in terms of what is going to happen. You used the word "fuzzy" a couple of times in there. I do not think any of us disagree that some of the conservation numbers are still pretty fuzzy in Ontario, that some of the numbers around potentials for parallel and independent generation are still pretty fuzzy in Ontario.

What are we going to do to start eliminating some of that? We heard the same things two years ago during the hearings, that we do not know in total what is possible in Ontario, that you cannot necessarily apply what has happened in another jurisdiction to Ontario. We have heard Hydro saying to us, two years ago with slightly different numbers, as you have said, and this year: "We don't know in total what is available out there. This is what we think is all that we can reasonably expect in this time frame."

But we hear other jurisdictions telling us, if they cannot tell us anything else which is Ontario-specific, that the same things were said in their jurisdiction before the programs were started and the programs were successful far beyond the predictions and the expectations.

When is Hydro or the ministry or somebody going to start to reduce the levels? We still have statements like this in the DSPS document: "The amount of demand management that can be achieved at any particular level of incentives is uncertain. Reducing this uncertainty could defer the need to start planning for supply facilities. Early market research and implementation of demand management may help to resolve this uncertainty, as well as provide an infrastructure and human resource base for increased efforts if needed."

When are we going to get beyond talking about uncertainty and doing something about eliminating some of the uncertainty that other jurisdictions have shown us clearly we should be able to eliminate? What programs are you prepared to pursue to ensure that we have a better base from which to work at the end of this planning process? It is certainly not apparent in the middle of the process.

Mr. Jutlah: As anyone who is familiar with the way in which energy is used in its numerous applications would know, it is a terribly difficult thing to determine the ways in which consumers would react to various kinds of measures. At the present time, there is a wide range of appliances, for example, available on the market, and energy efficiency is just one of the features which determines consumers' choice.

Through the Energy Efficiency Act, we hope to improve the awareness of consumers of the choices. We hope to place before consumers the kinds of energy equipment and energy appliances which will increase the technical potential for conservation.

That does not mean that one is going to achieve those technical levels of potential. Take an example of a motorist who buys a very efficient automobile, for example. The consumer may very well react to the gains in his disposable income by taking more trips. There is no way that one could force consumers into changing their habits to reduce their consumption. One hopes to encourage consumers to secure those benefits of conservation, but through the Energy Efficiency Act, we hope, at least at the technical level, consumers will have available before them the choices which will enable us to reach some of those conservation targets.

Mr. Jennings: In terms of our review of the DSPS and other statements that have been made, we have urged Hydro to make early and extensive implementation of efficiency-improvement options. Some of the reasons we support that are some of the reasons you have

mentioned, that earlier implementation will provide more information about their potential, what programs work and what programs do not.

One of the other areas where some disappointment was expressed with Hydro's conservation plan, although we have certainly acknowledged that it has moved forward in that it is going to start implementing some of these programs, is that we do still see it starting off later than we would prefer.

Mr. Charlton: I have one last question on this issue that you have just been dealing with. Everybody keeps saying there is an uncertainty out there and everybody keeps telling us that there are certain things that have to be done to reduce that uncertainty. When do we expect to see the studies generating the data to start to reduce some of the uncertainty we are talking about? Are we going to have numbers to look at before the final plan? We are only a year and a half away from what everybody tells us is the crunch point, 1990. When are we going to see some data in terms of the real cost-effective potential, above and beyond what we have heard from Hydro so far?

Mr. Jutlah: Perhaps Larry Moore would like to say something about the kind of information which is being generated by the research into the potential for conservation based on some work which the ministry has commissioned in the last little while.

Mr. Moore: I was actually going to answer the question in two ways. One of them is that the minister, through cabinet, did ask Ontario Hydro to provide a comprehensive plan on what it is going to do. In other words, the minister wanted some hard facts as well. He wanted a plan that would set out targets, set out program dates, set out various highlights along the way, to see when we are actually going to get some conservation and when we are going to know how much we can get.

The plan had, as has already been described, some very positive movement and it also left some disappointment. But there was movement, and the plan now exists, something to look at as something to work with.

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The other aspect that the ministry has been moving forward on is acquisition of its own independent analysis of the conservation resource. The technical advisory panel that came forward showed in its report the conservation supply curve for the commercial sector in Ontario, which was done by Marbek Resource

Consultants, commissioned by the Ministry of Energy. I believe those consultants are coming before the committee in a couple of days and they will probably more intensively go over the results of their study. We have actually now commissioned a second study, a larger study, to get even more data to move along this information need. In other words, I think we recognize the need for this information. We also recognize the need to get going on the programs.

Mr. Charlton: I have one very brief last question. Right at the end of the presentation, you have, "The Ministry of Energy is also working with the Ministry of Housing to update the building code to ensure that new housing incorporates economic levels of insulation and energy efficiency." Again, that is good to hear. Those of us who were involved in the select committee two years ago made that kind of recommendation then.

In the last two years, with the exception of the few R-2000 homes that went up in this province, we have had a couple of hundred thousand homes built in what has been a fairly major housing boom. As some of our presenters have said, they are now lost opportunities in terms of really effective energy conservation measures.

Some of us who have had our ear to the rails for the last two years know that although the Ministry of Energy has been actively pursuing the issue, there has been some substantial resistance in the Ministry of Housing and in the construction industry in general to any major changes and improvements to the building code in this province. What is the status of that working-with process that is going on? Is the Ministry of Energy still at loggerheads with the Ministry of Housing over this whole thing. If so, when is the ministry going to go public so we can start talking to the public and putting on some pressure if there is a major roadblock there?

Mr. Jutlah: We have other representatives of the ministry to assist us with responses to some of these questions. Bunli Yang, who is acting manager of energy management in the ministry, will respond to this question.

Mr. Yang: The Ministry of Energy has been quite active in lobbying the Ministry of Housing to consider revisions to the building code for group energy efficiency. There was a consultative forum, held in February of this year, in which members of the building industry, representatives from the Consumers' Association of Canada, the gas utilities, Ontario Hydro, the Ministry of Housing and several other government staff aired the ministry's proposals for

improved energy efficiency in new housing construction.

Following that forum, where we heard both positive and negative views, and also after some individual consultations with the Ontario Home Builders' Association, the ministry filed a formal submission with the Ministry of Housing to consider in its review of building code amendments revisions to the energy efficiency provisions. We have not heard back from the Ministry of Housing just yet, but at the staff level at least we are assured that those proposals are under consideration. There is an obligation for both ministries to report back to cabinet, but there is no time frame at the moment on the disposition of those proposed amendments.

Mr. Charlton: Okay. I understand that all that has been going on and that the Ministry of Energy has been very active in the whole process. I guess what I am asking you is, when can we expect to see the Minister of Energy (Mr. Wong) stand up? How many lost opportunities are we going to have to have before the Minister of Energy is going to stand up and say: "This is what is happening. There are real gains that we can make out there. The Ministry of Housing and the construction industry in this province are holding that up. Please, public, jump on our side so we can put on the pressure to make something happen." When can we expect to see it come out of the back room?

Mr. Yang: We have been discussing with the building industry this question of affordability. I think the Ministry of Energy has been trying to get accepted both by the building industry and by the public at large that affordability does not mean a first cost of an uninhabited home.

Affordability refers to the annual carrying costs of a lived-in, inhabited, operating home. If we could ease public consciousness and understanding and also have other forums to speak about affordability in that context, we would think that major progress would be made.

Mr. Adams: Mr. Jutlah, one of the reasons your ministry is important to us is that, it seems to me, in the province there is a widely held view—I think it is correct—that Ontario Hydro has kind of cornered the market on expertise in your field. I wonder if you would care to comment on how comfortable you feel dealing with something as large and complex as Ontario Hydro with respect to the resources you have at your disposal.

Mr. Jutlah: I believe the situation at the moment is that we recognize there is no way we can duplicate or provide the same kind of in-depth analysis of issues relating to the

provision of electric power to the province as Ontario Hydro can. It is not intended that we are going to duplicate those areas.

However, in line with the responsibilities of the Minister of Energy, we do maintain a staff capability to provide the minister with the information base he requires for administering the act. There are some definite areas where we can provide something in the nature of a second opinion on the technical side. A good example of that would be in the area of analysing energy markets and forming some kind of view of what the future might hold for electricity requirements.

Because of the fact that the ministry has adopted that broad view of energy markets, not just the market for a specific fuel, we are in a position to analyse the competitive forces which might come to bear on energy markets in general and the ways in which the different fuels might be competing for shares in the marketplace.

In the area of demand forecasting, we do maintain a small staff to do the work, but we engage in a great deal of consultation with external expertise in order to obtain their views and to obtain their assessments of the potential impacts of developments at the international level and at the domestic level of energy markets.

Mr. Adams: When you mention the external ones, are you comfortable with your access to information within Ontario Hydro, for example?

Mr. Jutlah: There is an ongoing exchange of information with Ontario Hydro in a number of areas. Whether that level of exchange is adequate or not is something which perhaps the minister himself might want to comment on. I am not in a position to indicate to you whether that is adequate and what might be done to improve that flow of information.

Mr. Adams: I do not necessarily want to direct it to just the four of you, but where would your staff typically come from? Would they typically have had Ontario Hydro experience?

Mr. Jutlah: I cannot give you any numbers on the staff who might have had experience in electricity matters coming directly from Ontario Hydro, but we do have on staff someone who was a Hydro commissioner.

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Mr. Adams: I just meant typically. My point would be that if Ontario Hydro has cornered the market, where do you get your people from if they are from within the province? That is all.

Mr. Rockingham: If I could just jump in, I think what you are asking—I have three years

experience with the Central Electricity Generating Board in England and my academic training is in power system planning of the electricity system. That is one example. I think what Cliff is saying is we cannot enumerate for you the total within the ministry.

Mr. Adams: I was just wondering the extent to which it is some sort of a closed circle—not to be critical of that, but because I do believe we have this problem of one monolithic sort of expertise.

Mr. Jutlah: I am not sure there is a monopoly on the resources which Ontario Hydro requires to run its operations. The international market is available and Ontario Hydro does draw on the international market. We do not have a policy of competing with Ontario Hydro for the same kind of resources.

Mr. Adams: You do not have a policy of not hiring Ontario Hydro people, for example?

Mr. Jutlah: I know of no such specific policy which says that we should not hire people from Ontario Hydro. On the other hand, we do have an exchange with Ontario Hydro staff. This has been in practice for several years.

Mr. Adams: You used the expression "second opinion." Do you feel you are in the position or you are approaching the position where you could in fact be proactive; in other words, offer the first opinion with respect to Ontario Hydro matters?

Mr. Jutlah: In the area of demand forecasting I think we have adopted in the ministry an approach which had not been used by other analysts and we pioneered that method of analysis, that is, end-use forecasting, essentially. We are very pleased, of course, that Ontario Hydro has adopted our models and is making use of that device in projecting its requirements for electricity, but our approach to demand forecasting enabled us to look at the specific end uses for a wide range of energy forms and the specifics of energy markets and to come up with an assessment based on scenarios for the future.

Mr. Adams: It seems to me, following the same line of reasoning, that one of the reasons independent generation is important is that it likely could generate—no pun intended—another pool of expertise. That is the line I am interested in. How many people can comment on that? I am not now talking about technology and research and that sort of thing, but with the sort of expertise you have and the sort of expertise that Ontario Hydro has in power generation in general, how do you think we are doing with

respect to independent generation in that regard? What sorts of people are being attracted into the independent generation field in Ontario?

Mr. Jutlah: Perhaps Tony has a better feel for the nature of that industry.

Mr. Rockingham: I think probably the answer is that yes, there is expertise being developed in electricity generation. In fact expertise of this sort has resided in Ontario as electrical generation technologies have changed. The private sector, of course, is very important in producing the generators that Ontario Hydro uses, so that expertise has existed.

I think what is happening now is that there is more expertise developing in areas such as small hydro, in cogeneration, where you are using heat and electricity; and yes, as an independent generation industry develops, you will see more and more companies taking an active part and therefore the level of expertise increasing.

Mr. Adams: Are you reasonably optimistic that sort of expertise is going to develop in the province, an indigenous expertise like that?

Mr. Rockingham: I think where there is a profit to be made, the private sector can respond very quickly.

Mr. Adams: My colleague from the other side was talking about uncertainty and he was particularly dealing with the conservation side of it. I was quite pleased to see that Ontario Hydro is trying to set probability limits to uncertainties in the system, and I think that is the way to go. That is the way to handle uncertainties in the system. You have this remark on page 11 about the uncertainty range, and we have discussed this in the committee before. You say that in your view, the probability that peak demand by the year 2005 will be between the upper and lower limits which are mentioned there is much greater than 60 per cent which is mentioned. How much greater?

Mr. Jennings: I think this statement is really looking at the type of methodology that Hydro has used to estimate its uncertainty. It is looking at previous experience from forecasts going back 20 years and looking at how those errors have evolved over time. Based on a simple statistical analysis and looking at, I think it is probably 0.8 of a standard deviation, they came up with this wide a range. That is simply a statistical analysis of previous forecast errors.

The time period for which they have chosen to do the analysis is one in which, after many years of seven per cent demand growth, demand churned down and growth was around 2.5 per

cent for several years. The forecasting took a while to respond to that, so as a result, there were very substantial errors in the forecast over that period. I think part of the width of that range reflects the fact that you have a period that may be unusually high in terms of errors. At the same time, Hydro now has much more expertise and uses many more models to forecast than it did previously. They used to use a fairly simplistic approach.

What we have done in forecasting is to use a scenario approach, and I think it is more likely that we have looked at, say, a reasonable bound. I do not think we are saying here the type of range that would result in 20,000 to 45,000 is not probably a reasonable bound to look at. What we are saying is, that probably bounds what is likely to happen. We do not see it that likely that demand would be 20 per cent higher. There is a 20 per cent probability that demand will be higher than that or a 20 per cent probability that it will be lower than that.

Mr. Adams: We were given to believe that what Ontario Hydro does is establish those limits. Then it has some sort of line in between, and presumably that is what it aims for. Does it matter? In other words, if the probability could be improved, does it matter, given what you mention in your presentation, that there is this reliability factor? It seems to me that we, the consumers, are paranoid about the lights going out and so on. So there is great pressure on Ontario Hydro—and by the way, great pressure on us, as politicians—for this reliability which you mention in your report. So does it matter if in fact we improve or narrow the target that Ontario Hydro might be aiming for?

Mr. Jennings: The actual way it is determined, the most likely case is projected first. Then based on the previous experience with forecasts, previous forecast errors, that kind of a range, the uncertainty range is estimated. I think certainly utilities have put a great deal of emphasis on reliability. Hydro has in its DSPS, and we certainly have agreed with that. It is very important and is one of the key elements of system planning. Hydro's current methodology for estimating reserve margin to achieve generation reliability results in a planned reserve margin of about 24 per cent, close to 25 per cent.

We have suggested that they review how that is done, partly because it is based on a study done about 10 years ago. The types of information about what it costs to have an outage is based on surveys that were done of industrial users about 10 years ago, or even earlier, I believe. There are

other things that have happened in terms of system-switching technology, including interconnections with other systems, which raise the reliability of any individual system. There are developments like that which we think should probably make it timely to have a review of how that reserve margin was calculated. Certainly, we would agree that reliability is a very important consideration.

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Mr. Adams: Thank you. I really do appreciate that answer. I have taken enough time. I was going to ask about the difference between the ministry's load forecast and Ontario Hydro's, but I will leave it.

Mrs. Grier: I want to get back to the timing of some of the things that need to be done. In the review by the last select committee, there was a recommendation that there needed to be changes made to the Power Corporation Act if in fact Hydro were to get into incentives for conservation and measures that would really increase its ability to pursue that option. Given the support of the ministry which you have indicated for demand management, when can we expect to see that amendment to the Power Corporation Act?

Mr. Jutlah: I believe the minister has indicated to the committee that the matter of the review of the Power Corporation Act is currently under way. It has been a commitment of the government to come forward with changes to the legislation in order to foster greater public accountability and responsiveness in the planning process. The minister indicated that there would be draft legislation forthcoming with respect to the Power Corporation Act. Unfortunately, I am not in a position to say what the timing for that item might be.

Mrs. Grier: My concern is that while the accountability sections and those other amendments to the Power Corporation Act are vitally important to the timing of making some decisions about future energy supply in the province, getting accurate data on the potential for conservation is critical. I am concerned that because those changes have not been done over the past two years, if they are now tied to perhaps more contentious and more complicated amendments, have you any confidence that in fact we are going to be able to have some realistic evaluation of the potential for conservation in time to plug into the decision-making process of DSPS?

Mr. Jutlah: As Larry Moore has indicated, we have been developing the information base with respect to conservation and its potential over

the past year or year and a half and we are continuing to do that. Whether that activity is going to form the basis for any provision with respect to the Power Corporation Act, I unfortunately cannot say. But the ministry does have a commitment to developing that information base on conservation and its potential. The minister is committed, as he has said, to making conservation the first priority of policy with respect to electricity and energy. No doubt these studies will help to shape his views on how much might be possible. I presume he will be looking to this committee to provide some guidance on what might be feasible with respect to conservation based on the information you get from the experts in this area.

Mrs. Grier: I think the committee would appreciate having some indication of the status and timing of the independent review of the cost of future Candu power stations. You indicate on page 5 that it has been acted upon. As I understand it, the review panel has not yet been appointed, though perhaps by now it has. Can you give me some idea when you anticipate or what kind of time frame we might expect for a response and some results of that review?

Mr. Jutlah: I suspect within a short while the minister will be acting upon that promise to announce a review of the cost of nuclear power by an independent panel. I am not in a position to say just what the terms of reference for such a panel might be or what the timing for reporting might be, but from the point of view of staff at least, we would like to see this information base be made available as soon as possible.

Mrs. Grier: Do you see that information base as being a critical component of the ultimate review of DSPS?

Mr. Jutlah: I would think that any examination of the options with respect to the future would have to take into account the cost aspects. To the extent that we can obtain the most accurate information on what the future cost of the Candu option might be, the cost of coal technologies and the cost of other options, the stronger will be the basis for making decisions on what a preferred plan might be.

Mrs. Grier: Moving to another topic, as Environment critic, I appreciate that any new, large-scale generating station will undergo a full environmental assessment, but one of the concerns I have about the whole aspect of independent generation is where environmental assessment of proposals by the private sector for generation fits in. I am wondering what your

comments would be on how that will in fact work.

Mr. Jutlah: Perhaps Larry Moore might like to say something about the environmental approval process in so far as it relates to generation.

Mr. Moore: As I understand it, there has already been a decision made that independent generation using waste will be subject to the act. Independent generation from other sources, you are quite correct, can have serious environmental, social and other impacts. There is no question about it. It is not absolutely clean and not a good thing to do in all cases.

What we are expecting for these projects is that they be examined case by case by the Ministry of the Environment, with advice from us. On the extent of the environmental review: all of the plans or undertakings, naturally, would have to meet environmental regulations in any case. The only issue then is whether they should be put under the Environmental Assessment Act for the potential of a full public hearing and that sort of thing, but clearly the regulations are in place.

Mrs. Grier: But are you leaving the door open for them not to undergo a full environmental assessment by your comment that it would be subject to discussion?

Mr. Moore: It essentially will be case by case. Some have been designated, some have not been designated, and I suspect that would be a desirable way of proceeding in the future. There are likely some projects with minor environmental impacts that can be adequately handled just by applying the regulations. Others will likely require a full environmental assessment. We are dealing with projects that could range from just a few kilowatts in capacity to projects that could be perhaps hundreds of megawatts. So the size, the type of fuel and the approach that is being taken is very important.

Mrs. Grier: On page 17, in your summary, there is a paragraph that says, "While the ministry is pleased with the emphasis given to demand management and independent generation, we are concerned that certain aspects of the strategy could prevent the full economic development of these resources." Could you spell those certain aspects out a little more clearly for me?

Mr. Jennings: Yes. In some of the ones which I have illustrated in the body of our presentation, we are concerned that the use of demand-increasing options which Hydro has alluded to be minimized. The concerns with that are that we

feel those measures are inconsistent with the rest of the thrust of the strategy.

Mrs. Grier: Just so I understand, by that you mean the whole marketing and promotion of electricity?

Mr. Jennings: Yes. I think they refer to it specifically as demand increasing in the DSPS, but it refers to those types of actions. Concern with that involves that they can advance the need for new supply and they can also make it difficult for the corporation to switch to marketing conservation from essentially marketing electricity.

We are also concerned—and I have mentioned this before—that we support the early and extensive implementation of efficiency measures, in some cases not quite meeting the fairly stringent criteria that they outline. It is partly for reasons that the early implementation of these programs can give a lot of information about potential, can show which types of programs work and which types of programs might not work, might not be successful.

In terms of discussing the financial grants criteria, one of the criteria they do mention is that they would not pay up to the full cost of a measure even if it were economic for them to do so. One of the things we are urging them is not to a priori rule out doing that; if to have a given measure achieved requires paying up to the full cost, we do not think we should rule it out on that basis.

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Mrs. Grier: Finally, if I may have one more question, we heard concern from the advisory committee—I always forget its title, but the outside committee of experts—about the mixing of strategy and policy and the certain fuzziness of some of the principles underlining DSPS.

I notice one comment of yours—I cannot find it here now—was about 28 of the 52 strategic elements. It seems to me the fact that you can pick out 52 strategic elements perhaps speaks to the generalities of some of the principles.

I wonder if you share that concern and if you perhaps have any advice as to how this study could more properly be divided into in fact a strategy with some underlying principles and then the beginning of the development of some policies.

Mr. Jennings: I think we did also note that 52 strategic elements are quite a lot of strategic elements, and certainly it was difficult to sort out what the priority was among each of them. I think it could have been set out with perhaps fewer

strategic elements, with other ones clearly designated as being subsidiary to those elements which were key. I know that Hydro did subsequently put out a small pamphlet. I do not have it here, but it dealt with just 11 of the strategic elements, which I assume are what it felt were the most important ones.

Mrs. Grier: We had from the joint advisory committee a model of how power planning should occur. I have not got it in front of me, but I am sure some of you are familiar with it.

Mr. Jennings: Yes.

Mrs. Grier: Do you concur with that kind of approach? Does that diagram as to how power planning should occur make sense to you?

Mr. Jutlah: The schematic which the technical advisory panel set out in figures 1 and 2, I think, is what you are referring to.

Mrs. Grier: That is what I am referring to, yes.

Mr. Jutlah: As the panel has argued, this approach to planning seems to make a lot of sense in that one can track through the process by which the information flows into the various points for decision-making, and a priori one cannot rule out the feasibility of employing these methods in an organization like Ontario Hydro.

There is no doubt that within the Ontario Hydro planning context a lot of these activities are in fact carried out. Whether the flow-through of the information is exactly in accord with the schematic shown here is probably questionable. The panel itself had some reservations about the way in which Hydro does its planning.

If indeed it is possible to follow this kind of linear approach in some components and an iterative approach in other areas, then certainly one might come up with something that represents a strategy, a plan and a statement of the course of action. From the public's point of view, that certainly enhances the understanding of the way in which the system is being developed.

Mrs. Sullivan: I appreciate the logic of your presentation this morning, in terms of the organization and so on. I hope my questions will be that way, although I think I am going to be all over the ballpark. The first thing I want to talk about for a minute relates to the natural conservation predictions or targets, if you like.

A couple of weeks ago, I spoke in London to Union Gas dealers. These are independent dealers. They were 500 strong, and at the conclusion of their forum day they had a group of manufacturers of equipment there. One of the things that really struck me about the kinds of

equipment the dealers were talking to the manufacturers about was they were indeed really pushing the energy efficiency standard, albeit for different fuels. Of course, the dealers' interest was in expanding their market.

I assume the same thing would apply on the electricity side in terms of natural market change with technology. If that natural market change that is not driven by the Energy Efficiency Act is occurring, is that where the 1,000 megawatts of information-driven targets for conservation are coming from? Is it there, or are the estimates for that saving based on predictions of response that would come out of advertising and marketing programs or a combination of both? Where does this natural technological change fit in?

Mr. Jennings: One of the reasons, I guess, there is some confusion is that Hydro changed how it referred to it. But natural conservation, generally, is what would be happening in the economy anyway. Let's say someone has got a 15-year-old refrigerator; when he or she replaces it, the new refrigerator—because all new ones are now more efficient—is going to be more efficient than the one that was junked.

The estimate of 1,500 reflects the fact that you have new, more efficient equipment coming into the stock; so the stock itself over time becomes more efficient. It is the estimate of what will happen by market forces. At the same time, if the utility involved itself in information programs and points out to customers the advantages of having these more efficient appliances when they go to make a purchase, they will be more inclined to buy the more efficient ones. That would enhance how much natural conservation is achieved.

The distinction between that and strategic conservation is that strategic conservation is where the utility actually adopts a program and either pays some of the costs of the measure or does some actual interventions.

Mrs. Sullivan: I understand that. I want to talk about that after.

On the other side of our natural conservation, the Ministry of Energy itself not only would be interested in energy conservation in the electricity area but presumably would be interested in energy conservation in other areas as well. Would you be embarking on similar marketing programs that in all areas, including the electrical area, would discuss conservation, or are you going to be doing that at all? Do you know?

Mr. Jutlah: Perhaps we could call back Mr. Yang to talk about the work that is being done with respect to the development of standards in

regard to efficiency and how that might impact on the markets for different kinds of appliances that are fuel-specific.

Mr. Yang: The ministry tries to undertake a range of programs and policies to try to encourage energy efficiency throughout the economy affecting all the sectors. Basically, they can be classified in three different ways: consumer information, training and better information for consumers. That would fit under what Rick Jennings has referred to as assisting natural conservation, trying to get the market to understand better the pace of technology development and eliminating some knowledge barriers.

Another classification is financial assistance. The R-2000 program that the ministry has been running is a good example of that, where some limited assistance is given to home builders who are interested in trying to push the state of the commercial art in putting energy-efficient homes on the ground.

The last category is regulatory framework, things like the Energy Efficiency Act and regulations under it and things like our proposed revisions to the Ontario Building Code.

It is important to recognize, though, that some of the actions taken under the regulatory side actually are intended to support natural conservation. In other words, if you look at the example of gas furnaces and these contractors and manufacturers of natural gas furnaces, to date there is a general awareness out in the marketplace of what a standard-efficiency gas furnace is, what a mid-efficiency gas furnace is and what a high-efficiency gas furnace is. But there is no definition in the marketplace. There is no law, no regulation, that specifies that this is a mid-efficiency furnace.

There have been varied advertising and marketing claims we have seen that have said "super-high-efficiency furnace" or "ultra-high-efficiency furnace." There is market confusion out there as to what is a standard-efficiency furnace. What are you getting when you pay a little bit extra if the contractor, or the utility even, says this is going to save you some money?

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What we have been trying to do at the ministry is to assist on all fronts, both the natural conservation and the understanding, to give out a level playing field in the case of the furnaces so that people have a comparative information base that they can actually make reference to.

We also have been trying to eliminate on the regulatory side the dogs in the market, which is our jargon for the very big energy wasters. We

have been talking closely with industry about the pacing of how we can eliminate the very worst of appliances and the timetables under which that would be acceptable—I do not know whether they would find it reasonable—in terms of new investment and possible shifts in production facilities to come up with newer and more efficient equipment.

What Hydro in the past has referred to as natural conservation we have regarded as what would happen in the marketplace with assistance, but that assistance does not have to be funding.

Mrs. Sullivan: When are the regulations under the Energy Efficiency Act expected? I know there are conversations and discussions going on now with the manufacturers and so on, but are we looking at Christmas?

Mr. Yang: We are anticipating that before the end of this year there will be at least three and possibly four technical standards that will have been generated by the Canadian Standards Association. They will form the basis of the regulations that will be proposed by the ministry for adoption.

This is only a staff expectation, but we have not seen any problems developing in our discussions with the consumers' associations and the industry; so I would expect that soon after the production of these technical standards, which we expect between October and late November, we would have regulations ready for consideration by the government.

Mrs. Sullivan: Moving into the incentive-driven program, one of the things that I think has become clear through our discussions is that cost is the major negative for a consumer, whether it is a residential, commercial or industrial consumer, in introducing energy efficiency into its operations. Yesterday we heard from a representative from California who talked about their utility providing 100 per cent of the cost in a new housing development. In other words, it was a grant, which Hydro cannot do; unless the act changes, in our jurisdiction we cannot do that.

But if that were done, and I am sorry I have not read this conservation supply study that you have done, it seems to me if you are providing 100 per cent of the grant, you are also adding another demand. It becomes very clear that over the longer term, for a house of the same price, a consumer is going to have an energy-efficient house that is going to cost him less in the long term. Are you not in fact encouraging people to use electricity?

Mr. Jennings: There are certainly utility programs—I think this is one of the things that Hydro had mentioned in its DSPS—that can distort the market in that sense if it is done by the utility on its own. That was one of the reasons they had given for not being in favour of going up to the 100 per cent grant level. To avoid that, one certainly would have to be careful about how one designed the program.

Mrs. Sullivan: I think this is very interesting. When we are so committed to conservation as the method of changing our supply requirements, I find these estimates of what can be saved very difficult to understand because many of the conservation methods are indeed going to increase demand. At least that is my conclusion; I may be very naïve about this. Maybe we are not far enough along to be able to say precisely that 3,500 megawatts is really what can be built in yet, and defining the incentives may become in fact what our first task is before we define the targets.

Mr. Jennings: Ideally what you would want is a program where, if the decision had been made to go electric, this would be done. But again, given that one of the distorters in the market is that people are only considering the first cost, it would clearly distort the market if people saw that going to this type of home was lower-cost down the road. In comparative terms, what you are doing with this type of program is eliminating any difference on a first-cost basis between an efficient home and an inefficient home.

Mrs. Sullivan: Okay. Let's—

Mr. Chairman: I do not want to interrupt your line of reasoning, but I have a list of questioners. Do you think you could come back if there is time at the end?

Mrs. Sullivan: Yes.

Mr. Runciman: I have some rather brief questions. I must say that I was struck by some of the wording in here, and it makes one wonder about the relationship between the ministry and Hydro, which I think Mr. Adams was alluding to as well.

On page 8: "The ministry is...supportive of Hydro's decision to voluntarily submit the draft DSPS to government and public review." That struck me as rather interesting language.

Another thing is on page 10, and Mrs. Grier talked about it briefly, where it states that "Ontario Hydro should plan on the basis that the next large-scale central generating station...will undergo a full environmental assessment." One could read into that that there is a tacit agreement

within the ministry that indeed we are going to proceed with some sort of large-scale generating station.

I guess some questions have been raised in my mind, especially by the chap from the technical panel who appeared before us yesterday on the California experience with cogeneration and independent generating, and what has happened there over the past number of years, and the fact that all of the new demand is being met completely by independent generators.

Maybe I am reading too much into this when I say there is already an assumption or an acceptance of the fact that we have to move in this direction. Is that a correct assumption?

Mr. Jutlah: I am sorry if the impression is conveyed that we are assuming that there will be a large-scale central generating station as part of the option for meeting future needs.

We are not prejudging the question as to what kind of generating option should be determined for the future, nor are we aware of any plans by Ontario Hydro to put in place a central generating station of any large scale.

What we are saying here is that if there is to be a large-scale generating station, then the planning process which allows for environmental assessment is perhaps the assumption which Ontario Hydro should use at this stage.

Mr. Jennings: Ontario Hydro in its DSPS has given some suggestions as to where it sees that the environmental approvals process could be streamlined or there could be alternatives to the current system. This is just an intent to suggest to them that while it may be useful to look at alternatives for the present, they should be planning on the basis of the current system.

In terms of their voluntarily submitting the strategy to review, it was Ontario Hydro's initiative to go into the demand-supply options, originally demand-supply options study. It was an initiative taken by Ontario Hydro and approved by the Ontario Hydro board of directors. This is why we refer to them having voluntarily submitted it for government review.

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Mr. Runciman: I wonder if you could give your views on the resource smoothing strategy, how you feel about that. Do you think it is an appropriate way to go?

Mr. Jennings: I think it has the potential for reducing the system flexibility to respond to changes in demand. It will also probably result in a less diverse system, which again has some flexibility considerations and perhaps security

considerations. It probably has some benefits in terms of smoothing your requirements on the construction industry and on unemployment, but we would suggest to Hydro that it certainly be given a very low priority.

Mr. Runciman: The Ministry of Industry, Trade and Technology suggested that it could be used to justify development plans that introduce large supply projects prematurely, perhaps at the expense of other demand or supply options. I wonder if you share that view.

Mr. Jutlah: There is some thinking in certain ministries that there is a role for large-scale construction projects by Ontario Hydro to assist in economic stabilization. In other words, if the economy is moving into a recession, it may be possible, if you have a sufficiently flexible construction plan, to speed up projects so as to assist the economy in getting out of the recession much earlier than it otherwise would have.

I suppose there could be some support for that kind of thinking of the role of Ontario Hydro's construction program in economic stabilization, but behind it all there is an economic rationale that is based on the price of the power to the system. The objective should be to undertake some kind of least-cost planning that would ensure consumers get the long-term benefits at the lowest possible price.

Mr. Runciman: I wonder if I could get a very brief answer to this: MITT has said it is perhaps inappropriate to include resource smoothing as a strategic element. I would just like to know if you share that view, yes or no.

Mr. Jennings: In our review, as I say, we thought it should be a very low priority, which would mean that we would not think it should be the priority of a strategic element, so we would agree with that view, yes.

Mr. Runciman: One aspect of that is that the chap from California mentioned yesterday that you might see situations where a lot of employees who might be classified as redundant, for example, are carried on as part of this resource smoothing operation, which seemed to strike home with a few of us in respect to the report that was made public a number of months ago regarding the number of employees at Ontario Hydro.

I am interested in a couple of quick things. Western coal: in fact, in your goals, you do not mention the environment or the economy. It seems to me that those are the sorts of things, talking about fostering economic development, regional economic development and promoting

projects that are going to be as environmentally beneficial as possible—I was struck by the fact that those elements were missing from your goals. I do not know if there was any specific reason they were not incorporated.

Mr. Jennings: I am not sure exactly which part you are referring to.

Mr. Runciman: At page 19.

Mr. Jennings: In the review we prepared—I refer to this document—we did outline the general ministry planning objectives. One of them is to ensure that the protection of the environment and public health and safety are considered in electricity planning, in particular that generation and transmission site proposals comply with provincial government land use policies and environmental and safety requirements.

Mr. Runciman: What page is that?

Mr. Jennings: This is page 4 of our review.

Mr. Runciman: Do you touch on fostering economic development, the social and economic benefits to industries or regions?

Mr. Jutlah: The government review does include that there is a role for Ontario Hydro in overall economic development and there is some support for that view across government.

Mr. Runciman: Hydro does not share that view?

Mr. Jutlah: As you may be aware, the response to the free trade agreement on the energy side in terms of Bill 168 contained a provision that would authorize Ontario Hydro to participate in economic development programs.

Mr. Runciman: Mr. Chairman, I could go on with a number of other questions, but you indicated you have a number of other questioners.

Mr. Chairman: Shall I put you at the bottom of the list?

Mr. Runciman: I guess so.

Mr. McGuigan: I want to deal with an overall view of not just Hydro, but energy. I detect from questions which have been asked by members and also the answers you give—I hope you tell me whether I am right or wrong; that is the question part of it—a great deal of frustration on the part of people in the Ministry of Energy, who realize from a technical standpoint that there are huge gains to be made.

For example, in the apartment building where I live, it does not matter whether I leave the air-conditioning on all day or turn it off when I leave and turn it on when I come back; the temperature is still 80 degrees either way because

of the big panel windows. The place is a greenhouse. I know the air-conditioning is working because the hallways are nice and cool.

The same applies in the wintertime on the other side, heating the place. I turn it off because of my concern about wasting energy, but I am probably the only person in the building who does turn it off during that time. If I leave it off all day, it is a little cooler when I come back at night and I do not think it is because you get almost instant reaction between the inside of the building and the outside.

They now have gas furnaces which are 96 per cent efficient. They build them down in my riding. They will extract 96 per cent of the theoretical heat which is in the gas fuel and put that in the building; only four per cent goes out, carrying away the waste products of combustion.

You must find it pretty frustrating to know that all those savings are out there to be had. Politicians—I include all of us in this room, of all three parties—rather than, say, bashing the Housing people for not changing the codes or bashing Consumer and Commercial Relations for not passing an energy act soon enough, all bash Hydro, because Hydro is sort of out there by itself, cannot kick back, and it is a popular target.

I believe in bashing it when it deserves it, but I think it gets a lot of bashing that perhaps it does not deserve which should be directed to other ministries, because as a society, we have not really made a hard determination that, “Hey, we’re going to cut down on energy use; we’re going to cut down on acid rain; we’re going to cut down on use of nuclear fuel,” and so on; things we are doing to our environment. We have not made that hard determination and we take it out on Hydro. Do you not feel awfully frustrated in your job? Your answers sound frustrated to me.

Mr. Jutlah: On the other hand, I think staff at the Ministry of Energy are very happy to engage in the kind of work they become involved in. I cannot speak for any particular person, but I do not sense there is that level of frustration the member is referring to.

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Mr. Moore: I might add that in terms of the sense of determination on the part of society, particularly in terms of energy efficiency that may well be true, but certainly for the Ministry of Energy that determination has been made and is undoubtedly our chief priority.

Mr. McGuigan: I am certainly convinced that is your chief priority. The sense of frustration I feel is that we, as a society, have not yet adopted that priority, and until we do it is just too easy to

bash Hydro and blame it all on Hydro, that it has not put enough into its formula of giving credit to conservation. That goes back to this natural improvement in the market. It is certainly my observation and belief that when you look at the conservation we made on hydrocarbon fuels, we did it because of the Middle East. The Middle East had put the price up to \$48 a barrel and we followed suit with our indigenous supplies. The impetus for that really came from offshore, and therefore we had no alternative but to make the great energy advances we have made in automobiles.

But as long as hydro goes up at approximately the same rate as inflation, we just do not have that drive to make the changes in first cost. I will give you some examples from my own industry. They do not refer to hydro; they refer to use of energy. When you buy a piece of motorized farm equipment, you usually try to get about as small a motor as that machine can get by with, because the farmer who is buying it looks at the total cost. That is not true in the really heavy pieces like combines and some of the really heavy tractors; they are putting proper motors in there. In an awful lot of the other equipment, you get the smallest motor that will run that thing off the lot, and also the most expensive motor to operate.

An example is a rental truck. They trade them in every six months. They buy them cheap from the company because they buy them in large lots and trade them in every six months. They are not concerned with the upkeep. You look under the hood and they have a motor under there that would run a good-sized washing machine. In a case I know of, they took this truck out west. It was a small truck, one that you would say should have a gas consumption of about 12 miles to the gallon but it had five miles to the gallon. The little motor was so overworked and so inefficient that I guess it was not matched to the load. But the first cost to the customer is the lowest it can be compared to the competition. The first cost to the rental company was low. In six months somebody else can have the headache.

There is so much of that in our economy. How can we expect natural situations to take over a great deal? I think Hydro is being quite realistic, given the circumstances. There is not as much natural conservation there as you and I know there should be. I want to know what your comments are on that.

Mr. Moore: I could have a bit of a crack at that. One of the parts of natural conservation that we have already discussed briefly is the fact that people replace equipment—refrigerators, a range

of appliances, so to speak. Those replacements are more efficient generally, so whether or not the consumer wants to save electricity, he is going to save electricity just by replacing that object. There is a chunk of natural conservation there.

The other part of it, and I think the part you are getting at, is the motivation of people to save electricity. The conventional wisdom is that this is driven largely by price and the price of electricity now is considered to be reasonable. I do not think anyone in the ministry wants electricity to become really expensive to encourage people to use less of it. But there is room to advise people on how they can lower their bills and therefore save money and use less electricity. That is a responsibility we share with Ontario Hydro. It is a responsibility we and Ontario Hydro intend to carry out.

Mr. McGuigan: That brings me around to the point of living in a democratic system, as we do. Probably the best we can do is to advise, as you are doing, and hope for some improvement.

Mr. Moore: The other part of it in a sense, whether you include it in natural conservation or not, is our standards such as the Energy Efficiency Act which, as Dr. Yang was explaining, will force the worst refrigerators off the market, so that you cannot then go out and buy a refrigerator that is a little bit more efficient than your old one; you are going to have to go out and buy a refrigerator that is a lot more efficient than your old one. That is another specific role of government, to have appropriate standards where those standards are appropriate.

Mr. McGuigan: That act is not in place yet.

Mr. Moore: The act is in place, but not the regulations.

Mr. McGuigan: The regulations are not in place yet. Tough building standards are not in place yet. They may be thought out, but they are not in place yet, and until they are, Hydro is simply responding to the reality that there is not going to be fantastic natural savings. Therefore, they are saying, "We know this is the demand and we are going to try and meet the demand, because that is our responsibility."

Mr. Moore: They have made their estimate of natural conservation. We are through our studies, our independent analysis, making our own estimates, I guess, of the most cost-effective conservation. In other words, the very bottom end of those conservation supply curves or supply functions, those elements that perhaps are less than one or two cents a kilowatt-hour may

well be things people would do without incentives.

Mr. M. C. Ray: I have a few questions related to the role of purchases from neighbouring systems. Ontario Hydro, in the DSPS and in its presentation to us, indicated it will continue to depend on neighbouring systems for emergency support, and that long-term, firm purchases of hydraulic power will be considered as an acceptable alternative to building new supply facilities. I am having some difficulty just understanding what the ministry position is in relation to purchases and what the ministry view is of the Ontario Hydro position.

First, the ministry states that it wants to keep its supply options open as long as possible. I do not know what that means in terms of strategic planning, other than to not make a commitment. Then the ministry indicates that major power purchases may be a significant option and that the ministry supports stronger interconnections with other provinces. What is the ministry view of the role of external purchases to meet these future supply needs of this province?

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Mr. Jutlah: As you know, the ministry's key objective is to obtain security of supplies, to ensure there are adequate supplies of energy over the long term at the lowest possible cost.

The Ontario purchasers are at one end of the pipeline with respect to oil and natural gas. We buy large amounts of these resources from the western provinces and we accept that. In the case of electricity, we have no difficulty with purchases of electricity from neighbouring systems; in fact, we do so.

As the Premier (Mr. Peterson) has indicated, these resources should be developed and made available to Canadian consumers on a Canada-first basis. Once again, the response of the government in terms of Bill 168 to the free trade agreement was in terms of ensuring that Ontario's supplies of energy—electricity in particular—must be made available to Ontario and Canadian consumers with some price advantage and on a first-offer basis.

That underlying philosophy extends to the purchases of electricity from neighbouring provinces. Before Ontario can make decisions on options, etc., coal-fired generation or the nuclear option, there is every reason to believe that the possibility of obtaining power from neighbouring provinces should be explored. As you know, currently Ontario Hydro is exploring that possibility with Quebec.

Mr. M. C. Ray: The answer is to me as confusing as the written material, because I still do not know how you make your choice of plant facilities, whether nuclear, thermal or whatever, until you decide the state of dependency that you are willing to accept on foreign supplies or supplies from other provinces. What policy decision are we making with respect to those supplies? Is Ontario going to put itself in a position where it is dependent on the supplies from other provinces or not? Has that been decided?

Mr. Jennings: In our view, we see the purchase option, the power available, for instance, from Quebec—there is a very large potential source of power there. There are certain potential benefits in terms of environmental impact and the resultant diversity of supply that would be available to Ontario and would make the Ontario system a more diverse source of supply. In some ways it could have greater financial flexibility for Ontario Hydro to have that type of system.

At the moment, as Mr. Jutlah alluded to, there are negotiations ongoing between the neighbouring utilities. Depending on the outcome of those negotiations, the government would then look at what had been negotiated. One of the things we would be looking at is whether the price is competitive with what we thought could be done here and what the implications are in terms of security of supply. Whatever kind of contract provisions are negotiated are going to affect how secure that source of supply is and how secure it would be viewed as being. These are the types of tradeoffs that would have to be looked at.

Mr. M. C. Ray: I assume that you have to make a decision as you negotiate on whether or not you are negotiating to meet emergency needs, to meet the reserve requirement or to meet the ordinary needs of the system. Somewhere in there, somebody has to make a policy decision on what it is that we are negotiating for with Quebec and with Manitoba. Has that decision been made or not?

Mr. Jennings: Ontario Hydro has already negotiated a 200-megawatt firm purchase contract with Manitoba that begins in 1998 and the current negotiations with Hydro-Québec are on the basis of firm purchases.

Mr. M. C. Ray: Over what period of time?

Mr. Jennings: You would have to ask Ontario Hydro specifically what the details were, but I believe it is a longer-term contract.

Mr. Chairman: Mr. Runciman, do you have a brief supplementary?

Mr. Runciman: If Mr. Ray does not mind. I wondered if tying into that, whether it might be more appropriate, based on some of the testimony we have heard, if the Ministry of Energy played more of an activist role in those negotiations so that government was a player at the table, rather than simply leaving it in the hands of Ontario Hydro at some point in the indefinite future to come up with some sort of an acceptable agreement. We all have the feeling that agreement is not coming. Anyway, I just wanted to interject that it would be a more appropriate role for your ministry to be also involved in an upfront way in those negotiations.

Mr. Jutlah: I believe that is the kind of question that would be more appropriately put to the Minister of Energy.

Mr. M. C. Ray: In view of the Premier's statement that you recite here that we are looking at an energy policy that meets the needs of Canada first and in view of the ministry position that it supports strong interconnections, I would like to know whether there are any negotiations among Ontario, Quebec and Manitoba for the joint planning of the overall needs of the three provinces or whether there have ever been any negotiations of that type in the past for a three-province approach to bulk electricity supplies and needs of the three together.

Mr. Jutlah: I would like to call upon Nizar Jiwan, the senior adviser on these matters, to respond to that question.

Mr. Jiwan: With respect to joint planning, our ministry's view has been that it would be desirable for Canadian provinces in eastern and central Canada to have a more co-ordinated approach to planning their electrical systems. Whenever our ministry has had an opportunity to encourage other provinces to think about joint planning, we have taken that opportunity and made those suggestions. We feel that the Premier's highlighting the need for co-ordinated planning, the Premier's statement in Atikokan, has added support to the kinds of suggestions we have made in the past.

You may be aware that the federal Minister of Energy has recently made a suggestion that he would like to see the federal government also encourage joint planning among utilities and co-operation in the area of interprovincial trade. We feel that some of the statements he has made have been driven by the kind of suggestions that come out of Ontario, particularly out of our

ministry. We believe there is a federal plan to announce some kind of joint planning co-ordination policy initiative by the federal government which would be centred around the National Energy Board providing the technical leadership in that area.

Apart from that, we have also initiated, at least in the last two years since the question of supply/demand planning has been active in Ontario, direct ministry-to-ministry contact between our counterparts in Quebec City and in Manitoba to try to make some kind of a judgement as to the degree of commitment there is on our neighbouring provinces to do joint planning with Ontario. We have established contacts and we have done some preliminary work in that area.

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Mr. M. C. Ray: I have one final question. I ask these questions in the context of the Windsor Utilities Commission's submission that there seems to be some urgency for Ontario Hydro, in its view, to accelerate negotiations for long-term commitments from Quebec and Manitoba. Yet I do not get that sense of urgency from the ministry statement here at all. I am just confused really as to whether the utilities commission is accurate in its statements. Is there an urgent need for negotiated agreements with Hydro-Québec and Manitoba Hydro?

Mr. Jiwan: As a ministry, we have been very much aware that Ontario Hydro is involved in a very sensitive negotiation regarding price, as a key issue in the negotiations. We felt that on the one hand, as a province, we have a desire to make sure that we have diversity and all the good things that come with a purchase option. On the other hand, we are negotiating and we do not want to tip our hand as to how far we are willing to go with the price issue until some of the fundamental decisions in Ontario have been taken in terms of what the options are and how far we are willing to pursue them, particularly the views of a committee of this sort.

Until those issues are resolved, we felt, as a ministry, that it may not be appropriate for us to tip our hand, so to speak. It is in that context that we have treaded the line very softly, because we think it is in Ontario's interest for us to play it that way.

Mr. M. C. Ray: Is the Windsor Utilities Commission correct in its assumption that long-term commitments from Hydro-Québec and Manitoba Hydro could be committed elsewhere, for example, to the United States, and not be available to us?

Mr. Jiwan: There are slightly different situations with Manitoba Hydro and Hydro-Québec. Hydro-Québec sits next to a very viable and attractive export market in the northeastern United States. But one of the things we have to recognize is that while the US is willing to buy electricity from Quebec on a long-term basis, there are difficulties that Quebec faces in capturing that market.

Some of these difficulties are not easily resolved. There are technical difficulties in terms of the characteristics of the electrical system; there are difficulties in terms of the transmission issue; there are difficulties in terms of the sentiments of the coal-mining industry in the US, for example, and so on. These are the factors which will shape the extent to which Quebec will be able to capture the American market.

These are also the factors that will determine the kind of negotiating environment Ontario Hydro is involved with. On the one hand, we are told there is a very lucrative market to the south and all the power will be sold unless we rush into it. On the other hand, we know there are subtle factors that play in the US.

I think Ontario Hydro and Ontario overall is wiser to be more cautious in jumping towards an accelerated solution to the negotiation. The approach that Ontario Hydro is taking of playing each round at a time, keeping in mind the kind of debate and the direction it is getting from the public system, from the government and other advocates, seems to me an appropriate approach, at this point in time anyway.

Mr. Passmore: I have some quick questions which I think could be answered with some fairly quick responses.

On page 2 of your submission this morning you make a statement that, "In keeping with its mandate, the ministry has a responsibility for developing policy on electricity planning matters." It is my understanding that Hydro is not obliged to react to such policy initiatives, and I suspect perhaps that is what motivated the technical advisory committee to make its recommendation 20, asking that the Ontario government establish an independent, ongoing technical agency to conduct an in-depth public review of Hydro's power system plans and reject those plans, approve them, adjust them or make revisions to them as necessary. What is the ministry's view on recommendation 20?

Mr. Jutlah: The need for review of Ontario Hydro's plans is something on which I think the panel has come down very strongly. Whether that review should be done by an independent

technical panel or be subject to other means of review is something that has not quite yet been determined.

One of the things that is happening right now is that the Power Corporation Act is being reviewed. The question of accountability and the provision of government advice and direction to Ontario Hydro and the extent to which the corporation's mandate might be clarified are things that need to be sorted out before one can jump to the conclusion that there is a need to set up another independent body, perhaps something like the Ontario Energy Board, for example, to look into matters relating to a planning need.

Mr. Passmore: You are saying that the need for review is not in question, it is just the mechanism?

Mr. Jutlah: That is right.

Mr. Passmore: My next question relates to some of the discussion we have been having over numbers. I am wondering if perhaps, rather than arguing over whose data are accurate—I think it is important to gather data, do not misunderstand me there—the question really is what is the value of power to the system. Indeed, you point that out in your presentation this morning.

Once we establish what the value of power is, we then need to set up a framework for the marketplace to function. Once the marketplace starts to function, possibly then we do not need to argue so much over numbers. In fact, the system uncertainties start to be resolved simply because market forces are taking over. In other words, what I am suggesting is that possibly what is needed here is a policy initiative in the area to get the market going rather than arguing over whose data are correct.

Mr. Jennings: In terms of what we have recommended with regard to rates for independent generation, we suggest that the rate should reflect the value of the power to the system rather than an attempt to base it on the cost of generation or to differentiate between the types of fuels. It would reflect what that power was worth to the Ontario Hydro system, and you could make allowances for availability and that type of thing. We are suggesting the type of standard contracts Hydro would prepare would contain rates based on that principle.

Mr. Passmore: I was actually referring more specifically to the discussion about the numbers on energy-efficiency initiatives, but your point still remains.

I have a quick question relating to one of the diagrams in the technical advisory panel report,

if I can find the appropriate diagram. The technical advisory committee has suggested that some type of schematic similar to this one would be desirable for Hydro to provide so that we could have some kind of idea of where it is going. Does the ministry have any views on where in this schematic the current DSPS that we are reviewing fits?

Mr. Jutlah: I suppose we are somewhere about the middle of that diagram. Because of the fact that the Hydro planning process is not schematized in the same manner, it is difficult to say exactly where we are, but obviously the current review of DSPS does take into account the question of the need for facilities based on the demand outlook, which in turn incorporates demand management possibilities. The questions of the capability of the existing system and the choices for new supplies are questions that are being addressed at the moment in the reviews of DSPS.

I suppose to the extent that one can introduce probabilistic measurements of risks in the strategies, we are also including that element in the current review. We are certainly not at the point where we can talk about a preferred plan; that is something Ontario Hydro would have to come back with after the current review of DSPS. Beyond that, of course, some kind of action plan would need to be spelled out.

1230

Mr. Passmore: One final question, and this is aimed at witnesses Jennings and Rockingham. Both of you apparently were on the Porter Royal Commission on Electric Power Planning hearings. That, I believe, was in 1971. Obviously we have come some distance since that time.

Mr. Jennings: The final report was in 1980.

Mr. Passmore: Was it?

Mr. Jennings: It was 1975 to 1980. I was not there that long, but it was from 1975 to 1980.

Mr. McGuigan: Are you born again?

Mr. Passmore: Now, now. Obviously we have come some distance since that time, but a lot of the same recommendations were being made back then that were still being made two years ago in the select committee and are being discussed again here today. I am just wondering what your views are, having been involved in the Porter commission hearings, on just how much progress has been made.

Mr. Rockingham: I suppose, as we have said in our review, one of the things we are very pleased about right now is that Ontario Hydro is moving more and more to integrating demand-

side and supply-side planning. I think when the evidence was produced before the Porter commission, it was clear that this integration did not exist. That is a key element. Rick can possibly say more about the forecasting, but I believe there have been major changes there. The environment is very different now than it was then. I am not sure of any other points I can touch on.

Mr. Jennings: At the time the Porter commission was set up, the type of plans that Ontario Hydro had were based on load forecasts of about seven per cent per annum and the plan that was looked at then contained—I do not remember the numbers—certainly at least five more nuclear plants after Darlington planned by the year 2000. It was very much a supply-oriented plan and there certainly were not considerations of either demand management or, to very much extent, independent generation.

Subsequent to that, not really just because of the existence of the commission, certainly load forecasts came down considerably after that and there have now been attempts by Ontario Hydro to incorporate other measures besides just looking at supply. So I think the corporation is certainly much less supply oriented than it was at that time.

Mr. Chairman: Mrs. Sullivan, I sort of cut you off in full flight a while ago. We have run by a bit, but I do not know if you have completely finished your line of questioning.

Mrs. Sullivan: Okay. I will be short. I will ask it of Dr. Moore, who is involved in the conservation planning area specifically. What I am trying to get at is a level playing field between fuel sources, and there are some conservation methods that ensure that playing field is even. R-2000 might be one of them. Presumably the changes to the building code might be another. But when we move into incentives, there is a risk that the incentives will indeed alter, particularly in residential heating, the playing field in terms of choices of fuel sources.

The ministry has said it is disappointed and prefers to see 100 per cent incentive programs for efficiencies, when Hydro was saying it would like its efficiency incentives to be less than the full cost. If the fuel source is going to be kept even, if natural gas is still going to be a player, by example, in heating, if oil is still going to be a player in heating, the conservation incentives, it seems to me, should be applicable to all areas. Basically what we are doing now is saying to Hydro, let's see your incentives. Where are the incentives to keep that playing field level coming

from so that there will not be increased electricity demand?

Mr. Moore: I am sorry; I am Dr. Moore. This is Dr. Rockingham. Do you want Dr. Rockingham?

Mrs. Sullivan: I am just looking over there.

Mr. Rockingham: Maybe I can talk in terms of the programs at the Ministry of Energy and the experience we have in that area. First, I guess I should clarify—perhaps Rick could find the exact page or the quote—that the ministry is not saying in its review that we believe Ontario Hydro should always pay 100 per cent of the economic incentive that could be paid to encourage conservation.

We encourage Ontario Hydro very much to take the sort of actions and to develop the sort of programs that will encourage conservation, but we encourage it to develop the lowest-cost programs possible that are consistent with capturing that conservation resource. We say a priori do not reject full incentives, but we are not saying go to that full incentive first of all. I think it is clear they have to do it in the least-cost manner that is able to capture that full conservation resource.

In terms of the level playing field and the other sorts of things, the program options, as I said in terms of the guidelines we use in developing programs we recognize there are a variety of market barriers and it may be that you do not require an incentive or that in fact a financial incentive will not be as effective in overcoming some institutional hurdles. For example, in the case where you have a building that is owned by one individual and rented to another individual, it is not clear to whom you should give the financial incentive to make the building more energy efficient. Perhaps you need an institutional change so that the cost of the heating is paid for by the building owner rather than by the tenant. Then perhaps you can have a better marketplace functioning there.

Those are the sorts of considerations we would encourage Ontario Hydro to take account of when it is developing its programs.

Mr. Moore: Maybe I could add something to this. Am I correct in restating your question that if you build a super, energy-efficient home the only practical way of heating it is with electricity—

Mrs. Sullivan: No, that is not what I am saying. All I am saying is we are saying to Hydro, you come up with incentives for a specific fuel source for heating. Say it is a 300-megawatt saving for heating in the longer term, once you take all the sectors out and so on; we are saying to Hydro, those electrically heated homes may in fact become far more attractive.

Mr. Moore: If you are dealing with a retrofit market, there is no problem. The homes are already heated with electricity. You get savings if you give the people incentives. The retrofit market is okay. Perhaps your point is, what role should Ontario Hydro have in providing incentives in the new home market?

Mrs. Sullivan: California said yesterday it paid 100 per cent of creating energy-efficient electrical houses.

Mr. Moore: Yes, and other jurisdictions in the United States prohibit the use of electricity for heating homes. There are many options available to deal with these and decisions have not been made on what are the most appropriate ways of going. It is certainly an issue to keep in front of us.

Mr. Chairman: I would like to thank the panel for coming before us today and speaking to us about the interministerial report. I think we have had a full and wide-ranging discussion here. Thank you again. I will adjourn the committee until two o'clock this afternoon.

The committee recessed at 12:40 p.m.

AFTERNOON SITTING

The committee resumed at 2:07 p.m. in room 228.

Mr. Chairman: Can I call the afternoon session to order, please? This afternoon the first witness before us is Dr. John Robinson, from the University of Waterloo. I think, Dr. Robinson, you have some overheads.

Dr. Robinson: Yes, I do.

Mr. Chairman: We will get the machine plugged back in. Perhaps while that is happening, for the benefit of the committee, you might just tell us a bit about your background in the area of load forecasting and so on, which I understand is the area you are going to be speaking to us on this afternoon.

DR. JOHN B. ROBINSON

Dr. Robinson: That is right. Let me begin by apologizing for the quality of the document that has been distributed. It is basically just my own notes to talk from, plus the overheads I am going to be presenting, so it is sort of point form; but the amount of time and resources available precluded producing something which maybe would have been less useful anyway, an academic paper on the topic.

Let me also begin by giving I guess maybe a standard academic disclaimer, which is that when you invite people like me to give talks like this, we are used to captive audiences we can lecture at. So if you detect any of that kind of tendency, throw a pen at me or something; interrupt.

I have been working in the area of forecasting and demand management and renewable energy development for about 12 years now. I teach a number of courses on energy policy in Canada and have written a bunch of stuff, as is required for academics to do. I have had a number of contracts with Energy, Mines and Resources, with the Ministry of Energy and with Ontario Hydro, and I am on Hydro's external review committee for the load forecast and have been for a couple of years, with an absence last year when I was away on sabbatical.

Maybe most relevant here is that I testified twice to the previous select committee on load forecasting and on electricity efficiency analysis in the fall of 1985 and the spring of 1986, and the article that resulted from that testimony has been submitted to the committee some time this summer. Much of what I am going to say today

has been explained at greater length in that article, although things have changed in the last year and I am going to deal with that.

Mr. Adams: Will you be publishing an article on this afternoon's testimony?

Dr. Robinson: No. The last committee had more resources available for more analysis to be done. What I am going to say here today is not something that I can meaningfully claim as worth writing a second article on. In fact, when I looked through my old overheads from last year, a number of them seemed fairly relevant today, which is an experience that other people have had with the ongoing series of select committees and task forces for about the last 15 years, although I am not going to use any of them again.

What I want to talk about is load forecasting, but load forecasting in the context of system planning and DSPS. I have been wading through a lot of the documents now, trying to catch up after a year away. I want to essentially do six things. What you will find is most of what I say is the point-form material you have and then coded on the left are the overheads in order. They are numbered and tacked on the back.

Mr. Chairman: Here is the mike for the benefit of our electronic recording system, if you would not mind. It will save you the trouble of publishing your comments.

Dr. Robinson: Publish or perish is a real world constraint among us.

Mr. Adams: It depends on how you define the real world.

Dr. Robinson: I always have trouble with people who say the university is not the real world. It seems to me it is one part of it. It is a real world concern to me.

Mr. Adams: I am sure we could debate that a long time.

Dr. Robinson: Is the mike working now? I did not know overheads were a novelty here. I could try to do without them.

Mr. Chairman: They are not. The mike was not in the room. It should have been here, I guess.

Dr. Robinson: I thought I would start with some very brief and general comments on DSPS itself and on the technical advisory committee report on that; move on to equally briefly discuss the sort of history and evolution of Ontario Hydro load forecasting; outline what I see are some of

the problems with the current approaches, not so much with load forecasting per se but with its current role given the DSPS's existence and given what Hydro is now up to; outline what might represent an alternative way of proceeding, of dealing with this demand futures problem that Hydro faces; and finally, say a few things about the implications of these comments for the question of external review and political direction of Hydro.

I would like to start by saying that I think that the demand/supply options study, as it was, and DSPS now, are very important initiatives for which Hydro should be complimented. They are evidence of a big shift in thinking and direction. We heard about Porter this morning, and I will say a few more words about that later. DSPS would have been unimaginable 10 years ago coming from Ontario Hydro, but it is here, and I think that is a good thing. I also think the technical advisory committee report is a very good review, and I would like to endorse strongly three of its conclusions which have to do with what I am going to say today.

The first point is the difficulty one has in coming to grips with what Hydro is actually up to these days, with many, many documents being produced from different divisions, with different numbers that are not always reconcilable. It is not always clear what role these documents and positions and strategies actually will play in the end. I think this is not so much the fault of the corporation as it is just a reflection of the fact that big changes are going on. But is very hard to come to grips with what this all really means for practical system planning purposes in terms of what is really going to happen on the ground. That needs to be made clear. That is one point.

The second point is that I agree with the technical advisory committee that demand-side potential is underestimated in the numbers that Hydro is using, the 1,000- or 2,000-megawatt strategic conservation potential—I will come back to the problem of terminology in a minute—and some of the incentive-driven numbers and so on.

In support of that view, I just want to point out some work that Ralph Torrie and I and Charles Figueiredo did last year for this same committee, or its earlier incarnation, which was commissioned by the committee. It is a very rough-and-ready initial calculation of demand-side potential, where we looked at Hydro's then load forecast, the 1985 load forecast. That is the blue one on the top. We looked at their load-meeting capability, their ability to meet that load. Of

course, they were saying that by the year 2000 or so we will be into the need for new activity of some kind, either supply-side or demand-side.

We did our own little estimate of technical potential—not maximum technical potential by any means; somewhat conservatively, we left out whole areas—for efficiency, which gave us a number which was lower than current demand. We were not claiming this is likely or that this is all achievable by the year 2000. We did not have the budget or time to do that. But we did think we established, to our satisfaction, that there is a fairly big conservation resource here and, in fact, one which, if followed, causes some serious planning problems for a utility that would be in a fairly big surplus if that kind of future came about.

Let me emphasize the preliminary nature of these numbers. This was a small piece of work, but it has since been followed through, in part by work you are going to hear about tomorrow. I think Ralph Torrie is testifying about what he did for the Ministry of Energy, the conservation supply curve study—and Hydro has itself produced a bunch of supply curves of this kind since we testified—and on more recent work that Ralph has again done on acid gas reductions and demand strategies, which will be forthcoming some time soon. So there is ongoing work which supports these early conclusions we reached. Although the numbers are not exactly the same, they are indicating a fairly substantial potential.

The third point I would like to agree with that the technical advisory committee made is that it is crucial that there be some kind of real, ongoing, external review of what Hydro is up to, for two reasons. First, there are a bunch of political decisions that need to be made and Hydro is not necessarily the right agency to be making them. Second, they probably need, for their own internal purposes, some direction that can give some order to this huge amount of activity going on in all these different divisions. To try to pull it all together is maybe asking too much of them. I think ad hoc advisory reviews of this kind are very useful but are not a substitute for what is needed.

Now, let me turn to what I am supposed to be talking about, which is the evolution of Ontario Hydro load forecasting. As you are familiar with, I am sure, in the early days—and here I am talking about the early 1970s and earlier—there was an emphasis on base case prediction. We just put the straight edge on the semi-log paper and got seven per cent and that was going to go on for ever.

That was what everybody was saying in those days, not just Ontario Hydro.

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The role load forecasting played in the system planning process was something along these lines: you start with the load forecast; review what you have in the system and how much more you are going to need therefore, and go out and find a supply and build it in. That is a very standard load-forecast-driven system; the whole thing is driven by the load forecast.

Of course, the problem was that all those load forecasts were wrong. This is the kind of standard chart—I have not even updated it by adding the 1987 load forecast—of what has happened to the load forecast since 1972. This is the load forecast for the year 2000.

As we all know, they dropped about 60 gigawatts, 16 Darlington, in that period up to the early 1980s. That, coincidentally, is the Porter era; it was during the Porter commission that this was all going on, the mid-to-late 1970s. The load forecasts were coming way down, so by 1980 Ontario Hydro had concluded that we do not need 17 Darlington; we only need one. That is a big difference; for the year 2000, remember.

Now, notice the stabilization. During the next period here, which in a sense is the period we are still in, the load forecast stabilized, this big drop ended. That was partly as a result of increasing sophistication: the development of the economic and demographic energy model, which says electricity demand is a function of price and income and if you can predict those you can predict demand—I am oversimplifying, but that is roughly what it says—and the end-use model, which says no, you add up all the refrigerators and you add up all the houses and how much energy each of those uses and that gives you electricity demand.

Both those models were being refined and developed in this period and both approaches have been used over this flat part of the curve. In fact, if you add 1987, I think it is 28.6 gigawatts, almost exactly the same as 1986. So we see a real levelling out over that period.

That period, then, is characterized by three developments—the 1980s generally. First, the end of the surplus capacity period. Because the load forecast had dropped so much and because they had been building to the high forecasts a few years earlier and because the lead times are so long, we had huge surplus capacities, in the order of 40 per cent or 50 per cent in the early 1980s. That period worked its way through the system, where we are now, as Hydro has said many

times, in a situation of choosing new undertakings. So the committed program ended.

Second, the whole demand-side issue emerged. For example, this is one kind of typical presentation you get of demand-side management. This one happens to come from the Electric Power Research Institute which also has a big demand-side program. These are the kinds of strategies you have been hearing all about in DSPS: the load management down this side; the efficiency conservation or incentive-driven conservation down here and, of course, the sort of skeleton in the closet, which is the strategic load growth. I have never really understood what flexible load shape is, but it does not much matter. The point here is simply that demand-side management emerged as a big utility concern, initially in the United States but it made its way to Canada, so this whole new set of opportunities opened up.

The third characteristic of this era which is relevant here is the explicit recognition on the part of Hydro of deep uncertainty in the load forecast. As you know, since 1986 they have been publishing uncertainty ranges—maybe the last three years; I cannot remember exactly—of this nature. This is the current one which was presented to you, I guess, a few weeks ago.

The important point here, of course, is that the uncertainty range—and remember, this is only a 60 per cent range; there is a 40 per cent chance it is outside this range—you cannot read it from my notes because they are in pencil and did not photocopy, but it is a little over 200 terawatts, which is 1.7 times all the electricity we use today; the 60 per cent range is that big. If you want to put it into peak megawatts, it is about nine and a half Darlington, about 33,000 megawatts.

That is an important step for Hydro to make, to acknowledge this uncertainty. Whether the numbers are exactly right is not the point; the point is there is a lot of uncertainty. Of course, that makes it rather difficult to plan. We are talking about a period here which is little more than a lead time or so away, maybe a lead time and a half away, where we have somehow this huge range of uncertainty.

Those three things—the end of the surplus capacity era, the emergence of demand-side management as a new focus of utility activity and the recognition that we are in a deeply uncertain era—led to DSOS and DSPS. Why all that matters for load forecasting is that it also led to a shift in the function and the focus of load forecasting, away from just trying to predict the future and towards saying we also have to figure out what is

possible. A distinction between prediction and targets is one way to think of that.

Part of that second characteristic is the scenario analysis that Hydro has presented in its load forecasting, where it does a number of different economic scenarios. Part of it is the strategic conservation estimates they have produced. These are all part of a different role for load forecasting, a role which sees it as aiding in the development of estimating how much conservation we can really get out there.

We have load forecasting as a basis for system planning, an input to determine the need dates, to figure out when you have to build new capacity and, as an input to DSPS, demand-side planning, where what you are trying to do is to figure out how much you can change demand. The problem is that the existence of these two roles leads to problems. Let me turn to that now.

I will start by giving you a slightly modified picture of the overall utility planning process. Remember, in the old one the load forecast drove the whole system, everything depended on what the demand was going to be and you built supply to meet that demand. The newer type of process, which is now much more typical, is you still do that. That is role 1, which I just outlined.

You still have to figure out when you need new capacity; you still have to do system planning, but you also now are doing all this DSPS stuff, which is supposed to be an integrated, fair comparison between demand and supply. These boxes may not be labelled exactly how Hydro would label them now, but the general point is that there are two paths coming down—the standard system planning path and the DSPS path—and the load forecast is feeding into both. Load forecast is being used for both of these.

This is an improved process, I think, because at least now you are doing all this stuff over here, DSPS stuff; you are taking seriously alternatives that were not even considered in the past. There are still problems. I think there are five problems, or at least five I would like to comment on very briefly.

The first is that these roles are inconsistent. You cannot both predict and set targets using the same process; they are two different acts. One is saying what is likely to happen; the other is saying what you could do. This is the cause, I think, of a lot of the different numbers you find throughout the Hydro testimony. For example, just in the binder testimony presented to this committee, it is very hard to reconcile all the different numbers on the demand side. At least, I found it hard. They may well be reconcilable.

My point is not that somebody is wrong necessarily; the point is simply that there are two different things going on. Predicting demand is different from influencing demand.

That difficulty finds expression in this conflict between what Hydro used to call natural and strategic conservation. Remember, natural conservation was all the stuff that is going to happen anyway if the utility does not do anything. Strategic conservation is all the stuff the utility would cause to happen. They do not use that distinction any more. They are now talking about information-driven and incentive-driven. That is a worse distinction. Natural/strategic is bad enough. Incentive-driven and information-driven are even worse, because a lot of the old strategic was both incentive-driven and information-driven. A lot of the old natural was either information-driven or was incentives from somebody other than Hydro. They do not map well. At least the old distinction had the meaning of what would happen anyway and what we have to make happen. The new distinction loses that.

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Even the old distinction is a problem. The reason it is a problem is that you do not know what the distinctions are. The way you deal conceptually with that distinction is to say, "Here is our basic load forecast of what we really think is going to happen in the future if we do not do anything." That is the Hydro basic load forecast you have been presented with.

However, we want to assess how much we can influence it downwards. How much can we push the load forecast down through what used to be called strategic conservation? The problem is that you cannot do that unless you know what is already in the load forecast, how much conservation is already there. You have somehow to derive from the basic load forecast a base that there would have been if there was no conservation of any kind, including the stuff that is going to happen by itself, in order to get an estimate of that stuff that is going to happen by itself.

They do that by constructing what they call a frozen efficiency scenario, which is really the only way you can do it if you start from a basic load forecast. They used to think there were 3,000 megawatts here by the year 2000 that would happen by themselves. Mr. Rothman said to you in his testimony that they now think it is 1,500. The reason, it appears, is that they have refined their calculations.

In fact, it is very hard to get a handle on this because you do not really know where any of these curves are. Remember, in this curve itself,

there is only a 60 per cent probability that it is somewhere between about here and here. The uncertainty range is wider than the differences between the frozen efficiency and the primary load forecast. In fact, what you have is sort of a mess. The problem is that you cannot rely on a basic load forecast, and it is not a good basis for calculating efficiency increases.

Let me go on and come back to a sort of caveat about that. There is also a problem related to modelling that Hydro has to deal with. If you want to predict the future, many forecasters will argue, you want to use econometric methods because they are the best tested. They make the best use of historical data and they are statistically the most reliable. Besides, most forecasters are economists and they believe them more. They like econometric models more because that is their training.

The end-use model, on the other hand, is viewed with suspicion by many forecasters because you have to predict separately all the inputs. All it is telling you anyway is what happens when you multiply all the inputs by an efficiency factor; all the activity variables, how many houses, how many people, how many stores, how many offices, by an energy-use factor. It is just an accounting framework; it is not a very good predictive tool. That is the standard criticism of end-use modelling. I think it is a correct criticism.

The difficulty is that if you want to predict, you are trying to use your econometrics more. I should say Hydro uses all for everything; so it does not solely rely on the econometric model here at all, but there is a tendency, I think, to suggest that econometric models are better for prediction. If you want to do strategic conservation analyses, you cannot use econometric models because they are too aggregate. They are just giving you electricity as a function of some macroeconomic variables. You have to do end-use because what you want to know is how many refrigerators, at what efficiency, what penetration, how old are they, when are they dying off, how many are being bought. All those things are in end-use models.

So you have two different models that have two different kinds of uses, being used for two different things within this same whole process. Again, it comes back to these two roles. Are we trying to predict the future or are we trying to alter the future; or are we trying to choose the future is a better way to put it.

I would take issue with the technical advisory committee on one point. They said the way to get

around this is to make hybrid models; get econometric models and build in lots of end-use structure. My own view is that is going to make things much worse. They are going to lose the advantages of both. They are going to end up with no capability to do either very well. The strength of an end-use model is its detailed depiction of demand and the ability to simulate different scenarios. The strength of econometrics is revealing trends, and those are two different things. I am not a big fan of hybrid models. The three new Electric Power Research Institute models that Hydro has bought are all, I think, to some extent hybrid models; so maybe we will find out over the next 10 years or so how they perform. The problem is we cannot wait that long.

Problem four has to do with this uncertainty question. I have already discussed how it is very difficult to make decisions when you are choosing a range that is 9.5 Darlington wide. What do you do when your lead time for one Darlington is just somewhere in the middle of that funnel?

That, however, understates the problem, because we do not really know what the uncertainty range is. Hydro calculates its uncertainty range by saying: "We assume we are going to have the same kind of forecast errors out there as we had in the last 10 or 15 years. Our forecasts today are about as wrong as they were in the past." Remember, one of the characteristics of today is this whole new set of issues of demand-side management, which fundamentally alters the nature of all those relationships the models describe. So there is at least an *a priori* argument to suggest that past forecast error is not a very good guide to future forecast error, even if we want to predict.

Hydro is now just in the middle of instituting a new process for estimating uncertainty. That process may give us different numbers; we do not know yet, but it is important to recognize there is nothing magic even about that impossibly wide 60 per cent uncertainty band. Maybe the new process will narrow it. That would be nice, because then we would have less of a problem. Right now, we have a big problem and we cannot even rely on those numbers that give us that problem.

The response Hydro has to this uncertainty range is contingency planning. You have no doubt heard all about the contingency plans that are being developed. The problem is that the contingency plan implies planning for the median and then having alternatives if it is lower or

higher. That means if it is lower or higher, you are suboptimizing. You are not getting the least-cost system, by definition, because you did not plan to that. You did not do your calculations on that basis. I think there is some danger in giving some magic status to that median, or at least some sort of defined planning status to that median projection.

Moreover, this whole idea of an uncertainty range in bandwidth is a predictive idea. It assumes that what you are trying to do is get a handle on the likely future. That is inconsistent with saying: "No, we are trying to choose a future here. We want to choose a least-cost future; we want to choose an environmentally benign future." Those are different from figuring out what the future is going to be. Somehow, again, we have to reconcile these two different ways of thinking about load forecasting.

The final problem, in my view, is that retaining these two roles, keeping predictive load forecasting front-end on both DSPS and on system planning—and this is speaking just as an outsider looking at Hydro—interferes with what is needed internally and institutionally, which is some kind of integration of system planning, load forecasting and what used to be marketing and is now energy management.

Those are three different divisions with, it appears, quite different views of the world and with all the normal institutional rigidities and territoriality, alliances and differences. They are all struggling with these same problems. They are coming at it slightly differently. There needs to be some way of integrating them, because they are all part of DSPS. That is why DSPS is a sort of joint committee with representation from all three of these different components.

If we keep load forecasting as a separate front-end, we are not ever going to get this kind of integration that I think is required.

Let me suggest, and then try to justify the suggestion, that most of these problems I have outlined here with load forecasting cannot be resolved if both of these two roles, the predictive role and the demand altering role, are retained, but we have to do the nonpredictive role if we are going to do DSPS. If we are going to demand-side manage at all, it implies altering the demand, so we have to have a capability of assessing costs and benefits of altering demand.

That suggests that maybe we should throw out the predictive role, and that is what I am going to suggest, which is different from what the technical advisory committee suggested. They assumed in their analysis that we are still going to

have load forecasting as an attempt to get the most likely future and then we are going to try to deal with this problem of demand-side planning. If you go that route, then I think their recommendations about what Hydro should do with load forecasting make a lot of sense, but what I want to propose is a different route all together to what they are suggesting on load forecasting; at least I think it is a different route all together.

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This is the alternative approach, reduced to simplistic absurdity perhaps. Since I am going to spend a total of five minutes on it, you are not going to get quite as good an outline of it as you have had of Hydro's view of what to do, their approach. It is not very difficult conceptually to understand. I think it is difficult to do and I certainly have not more than suggested some broad outlines. It is not all that different from some of the things they are already doing. This is not a complete throw-out of what is going on; it is more a reorientation.

The purpose of the whole demand-side analytical process in this approach is to develop alternative demand and supply scenarios, build them up from the bottom and choose from among them on the basis of feasibility, impacts and costs. It is a scenario analysis approach to the whole problem, instead of a load-forecast-based approach, instead of starting from the load forecast and then trying to figure out what you are going to do.

You cannot have any good reliance on what the load forecast tells you, as Hydro's uncertainty band indicates. Instead, build up from the bottom completely different scenarios of what the options are and assess their costs, feasibility and impacts. The way you do that is by integrated demand and supply scenarios instead of, for example, fiddling around with a basic forecast to get a frozen and then subtracting that off so you can calculate this and subtracting strategic and getting a primary and then doing your DSPS or, as is done now, just taking the basic load forecast over to DSPS and doing all their demand-side analysis and ignoring the strategic conservation and the load forecast.

The way you do that is you create this line and then you build up various ways to meet it. That is the standard approach. Some of those ways are demand and some are supply. What I am proposing is you start down here and build the supply and demand up.

Of course, there are constraints. You do not have total freedom in what kind of electricity future we are going to have. Some of those

constraints are imposed by long-life stocks, buildings that are still going to be here in 40 or 50 years, demography that changes very slowly and so on. It is not an argument for an "anything goes" scenario analysis. It is an argument for recognizing the amount of choice and flexibility there is in building up.

That building up has to be in the context of something reasonable. I think that reasonable context is the economic forecasting that Ontario Hydro already does, that in fact underlies their load forecast. They already project economic conditions, unemployment rates and inflation and exchange rates. They have to do that to get a load forecast. It is probably a good idea to keep doing that and use that as giving you still a predictive range of what is likely to happen to the economy. There is no point building up scenarios that do not correspond to any view of what is a feasible, future economic pattern.

Retain that predictive forecasting of the economy, of demography, recognize it is uncertain, as they do, but retain that. Then to that future economy, that set of activities, how many people, how many industries, what they are doing; build up an electricity supply and demand picture. Of course, that does not solve your uncertainty problem because what if you are wrong? You can be as wrong in my approach as you can in the load forecasting approach in that the future never quite works out quite the way we think it should or we expect it will.

Mrs. Grier: I do not understand the difference. Try it again.

Dr. Robinson: Okay. The difference is, starting from a load forecast, which is your best guess on what the future demand is going to be—

Mrs. Grier: But based on the assumptions about employment, the economy and all the things. You are also using another one.

Dr. Robinson: Both of them take into account those economic forecasts. One of them then says, given the economic forecast we can derive a most likely electricity demand and then we can meet that demand partly through demand-side management, partly through supply.

The other approach is to take the future economy, the same prediction that you took for the other one, but build up an electricity demand and an electricity supply scenario that meets those needs for houses and industries and so on. Do not prejudge, in other words, what the demand is going to be and then assume: "Oh oh, we have to save 2,000 megawatts here. We have to build 3,000 here."

Find out what you would have to build on both the supply and demand side to meet those needs for human activities that the economic forecast gave you. It is essentially the scenario approach that Hydro uses now. Remember, they have two ways of dealing with uncertainty. One is the bandwidth, the 60 per cent. The other is to say: "Let's do a stagflation scenario. Let's do a high-growth scenario." That is what I am proposing essentially, but those scenarios are not the load forecasts.

Mr. Adams: Why are they not the load forecast? Integrated demand to me suggests that you are doing some sort of forecast.

Dr. Robinson: The scenarios right now are not used. The load forecasting that gets published in this document has the scenarios in it. It also has the uncertainty band in it.

But if you read the actual numbers, the long-term forecast year by year, it is this single line. The scenarios do not enter into that. They do not take the scenarios and say: "All right, let's build a system to meet that scenario. Let's figure out the demand and supply options required to reflect those scenarios."

DSPS took the scenarios and used them in the sample plans, but it misinterpreted it. They treated those scenarios as if they were the bandwidth of uncertainty.

Mr. Adams: Does this approach not produce an equivalent line?

Dr. Robinson: No. What this approach would produce—I am sorry I do not have a chart that displays that, because you get too many lines on it—is that it would not have any of these three lines on it. It would have a series of different scenarios—economic activity for each of—you may then want to choose what you want to plan towards.

Mr. Adams: Would not one of those lines be a surrogate for that line?

Dr. Robinson: No, because this line is measuring electricity demand. What those lines are measuring is economic activity. Underneath this demand forecast—

Mr. Adams: I did say surrogate, though. I mean, so the economic activity represents some level of electricity consumption.

Dr. Robinson: I am not being very clear, I guess. Let me try to put it a different way.

Mr. Passmore: I am not sure that I can be any more helpful. But I am wondering, if this approach, this line here represented a preoccupation with energy per se, as opposed to your suggested approach, which represents a preoccu-

pation with energy services, is that the difference?

Dr. Robinson: Sure. That is the terminology that I guess everybody is familiar with.

Mr. Passmore: Not necessarily. We did have a presentation by some of the other people who talked about taking an end-use approach or an energy services approach but we did not get into it in any detail.

Dr. Robinson: Let me try it this way. This forecast is the product of two forecasts, essentially, to really oversimplify. One is a forecast of what is going to happen to the economy. That is the services that are going to be required. How many people there will be, what kind of houses they live in, what kinds of industries we have, what kind of inflation rate, and all of those things—how many hospitals, etc.—are implicit in what I call the economic forecast.

Then there is a forecast of how that all relates to electricity demand. That gives you this line. What I am saying is, dump the second step. Just keep the forecast of activities and then build up electricity demand from the bottom.

The reason that is a difference is that you might come to very different patterns of demand-side management and supply-side projects than if you start with an electricity demand number and try and alter it. So let us not start with 20 or 30 gigawatts in the year 2000 then figure how to change that. Let's start with the number of houses and people and so on that we want to have and figure out different ways of providing those services.

It turns out to be a very different result. Let me give you a practical example, or maybe not very practical but more practical than the sort of abstract language I have been using. In almost every case where this type of approach has been used, such as in a number of Ontario studies and Canadian studies and in the US and other countries, the numbers that result—the actual potential for demand-side management—is much higher, invariably.

This comes back to the technical advisory committee argument that demand-side potential is being underestimated in this type of approach, because you are starting from a future electricity demand and then altering it instead of building up that demand from the bottom. I am sorry if I cannot be much more concrete than that.

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Mr. Passmore: Just to use a metaphor I think might be helpful for members on this whole question you are addressing of end use or

whatever you want to call it, essentially consumers are interested in energy services. They are interested in the fact that when they turn the ignition their car starts and when they throw the switch the light comes on. That is basically what they are concerned about. They are not concerned necessarily about how that demand or that need is met. They are concerned that it is met, and I think the latter approach Dr. Robinson is talking about is just how would you possibly meet those energy services.

Dr. Robinson: The bottom line is whether it gives you a different result.

Mr. Adams: It does nothing.

Mrs. Sullivan: How would the results differ?

Dr. Robinson: The results will differ in a couple of ways. One would be that instead of an expectation that you are trying to meet, you have some alternatives from which to choose.

Mrs. Sullivan: No, but you are not trying to meet the expectation; what you are trying to do is to use that as the basis for planning. It is not a target; it is a forecast.

Dr. Robinson: In fact, is it not? If you look at Ontario Hydro, it says 1,000 megawatts here. That is the size of the difference between basic and primary. They are going to say 2,000 this year because the president announced an extra 1,000 out of the blue on top of them. Is that a target or a prediction? You cannot really tell, because you have these two competing roles going on.

Is 2,000 megawatts of strategic conservation a target? If it is a target, then they are building to this line, they are saying, "Okay, 2,000 is coming in strategic and so many thousand in supply and maybe there is some other demand side that we could do if we wanted to go even further." Those are all targets, the load forecast presented as a prediction, as their best guess, with overt recognition of uncertainty. All I am saying is, let's make the whole demand side a target.

Mr. Adams: I still do not understand it, but there is no reason at this moment that I should. I think the conceptual process is very important to what you are saying. I can understand why this building up is very important. It gives you a very different view of the system. I can accept that much. It is just that I still do not really see the difference in the final product. I can see the difference in the process, and that is very important or can be very important.

Dr. Robinson: Let me give you an example of the difficulty this approach raises, and that is the

difficulty I alluded to earlier. What is natural conservation, how do you measure it and then how do you measure strategic conservation? I think Ontario Hydro would admit—it has indeed many times—that there is a real problem in avoiding double counting. How do you know the stuff that you have put in up here is not being recounted down here in your 2,000 megawatts?

When you, out of the blue, reduce from 3,000 to 1,500, because you say the data are getting better, but retain 1,000 down here and put in 1,000 of load shifting, which are sort of targets, how do you know that the measures implied in your strategic conservation estimates are not already in your natural conservation estimates? You cannot. There is no really good way of assessing that.

The reason is you are starting up here. You are floating up in the air. I say “floating” advisedly. When you have a 60 per cent uncertainty range, which is nine Darlings wide, you are floating, so you cannot rely on any of the numbers about strategic conservation potential, I do not think. You do not know what they mean. You cannot tell what they are going to do for you.

I think it is much more reasonable to say, just as we do with supply: “Let’s build up. If we do these things on supply, this is what the supply will be. If we do these things on demand, given our forecast of activities, of services, this is where we are likely to be.” Now, we still run into the problem of uncertainty there. I want to emphasize that. This does not eliminate the problem of uncertainty. You still need contingency planning.

Take the labels off these three lines and assume these are three different scenarios now—A, B, and C. This is one configuration of the system, this is another one and that is a third. They all have different supply patterns and different demand patterns. You then choose. They all assume perhaps the same economic forecast, as all of these do, in fact. Say you choose the middle one. You still have the problem of what you do if you do not make it. You get out to here five years from now and you are way off the path. You still have that uncertainty problem, so you still need to do contingency planning of the kind that Hydro is beginning to do.

I think what you need to do is build a risk premium. You say, “Okay, which of these demand measures and supply measures are flexible? Which are small scale, incremental and easily changed? Which are high reliability versus low reliability?” and you give them a premium in

your costing. You do try to build a system that allows you to switch lines.

Mr. McGuigan: Earlier, I made the statement that I thought that instead of all this econometric—I did not use the term “gobbledegook,” but maybe what you have said has prompted me to say that—instead of using that, really a political decision should be a big part of this as Ontario decides where we want to be 10 or 12 years from now. Do we want to be a heavy manufacturing province? Do we want light manufacturing? Do we want to give up a lot of our farm land to provide space for housing and railroad lines, all those sorts of things?

We must decide where we want to be in the future and then build to it, because I think whatever we do, industry will follow. If we build up an awful lot of excess hydro, then we are going to invite an aluminum plant in to use it up. If we have a big shortage, then we are going to drive people out to go someplace else where there is enough. There is far more automatic adjustment to that program as it goes along than is being discussed.

Dr. Robinson: And that kind of adjustment has gone on in the past. I think you are exactly right that focusing on choice rather than on a reaction is the difference. Obviously, there are some things you cannot choose.

Mr. McGuigan: Is that what you are saying?

Dr. Robinson: That is what I am saying. The idea of backcasting instead of forecasting is that argument. You identify desirable futures and try to reach them, recognizing you will never be perfectly right. But at least you are focusing on desirability instead of on reacting to likelihood, which you are always wrong about.

Maybe this will help. I hesitate to put this up again, this way of thinking about it. It is probably irretrievably academic. Remember, I talked about load forecasting feeding into two processes; one a system planning process—need dates, when you need new capacity; the other, DSPS. What I am proposing is something that looks schematically more like this, where you have demand and supply feeding both into some kind of scenario-analysis planning process in here. Load forecasting as it is done now and DSPS as it is done now are integrated somehow into the middle, into the scenario-generation method. Then there is a basis for choosing what kind of electricity future we want.

That leads me to my last point, which is who should be doing the choosing. I think it can be argued—in fact, I would argue—that Ontario Hydro would be quite right in saying that it is not

up to it to choose the future energy system for Ontario. First of all, it is only an electric power utility. Second, it raises important political issues, policy issues that Ontario Hydro just does not have the mandate to deal with, nor should it. It is a utility; it is not a political agency. It is not a parliament.

I think, in fact, Hydro is moving in this direction. What I am proposing here is more or less at the end of the tunnel of where it is going, and I think we are going to be faced with this problem, especially because if you look at the lead times in DSPS, we do not have any more time on supply, anyway. It is sort of academic. If the load forecasts go up, for example, demand-side management is the only option we have. We have to move heavily on the demand side, no matter what happens, in my view. So we are moving in that direction.

The more you move into demand side, the more you have to do this type of analysis and the more you raise these political questions, which are exactly the questions I think this committee should be fundamentally focused on, such as who is choosing what kind of electricity future we have? I do not think Hydro will do it itself for a whole bunch of reasons. It probably cannot do it in the sense of a strict interpretation of the Power Corporation Act, in terms of choosing beyond its mandate. I do not think it should do it, anyway.

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I think we need two things. There are two requirements at the political level. One is some kind of statement of direction, some kind of analytical process within the ministry leading to a policy position about how these choices get made and an initial statement of choice, at least a directional choice, and some kind of ongoing independent external review process with teeth. I do not know if there is another jurisdiction anywhere around that has a utility that has no real regulatory control, exerting only advisory power. There may be others. There may be many. The American experience is certainly not typical.

I think that is crucial; and without that, what we are going to have is a constant reactive process where you have committee after committee and task force after task force, royal commission after royal commission and OEB rate hearing after OEB rate hearing that are all reactive, because it is Hydro that is setting the pace. I think, to give them credit, they have set quite a good pace in this direction up to now, but it is not a good enough pace and it should not be them setting it.

I think the proposal I am making is in a way just making overt what is implicit in this whole DSPS. What we are talking about is choosing electricity demand futures, and somebody has to take responsibility for that.

Mr. Chairman: Thank you, Dr. Robinson. We have another 10 or 15 minutes, and I am wondering if members might have general questions or questions of Dr. Robinson that have not already been asked.

Mrs. Grier: Let me try something else that I fail to understand. A number of people have pointed out the need, as you do in your last slide, for some direction and some policy approach to be given to Hydro. In thinking about what that might be, I anticipate the answer, "Until we have done DSPS and looked at the merits of the various alternatives, how do we know what the best policy ought to be?" Where does one grasp that particular ring, and how does the government give direction to Hydro without anticipating what the results of this kind of a study are going to be?

Dr. Robinson: I think that while there will always be a need for ongoing study, this problem has been studied to death from the point of view of ability to make policy decisions. We know enough to make major commitments.

For example, take nuclear power. If we just keep ourselves within the uncertainty band of the cost of Darlington, the difference between what it was expected to cost when it was started and what we now know it is more likely to cost, if we just keep within that error band, that gives us a huge degree of freedom in making choices now. We do not have to worry.

On the supply side, there is a great deal of uncertainty too. Even if we only want to be within that range of uncertainty, we can do a lot right now within that range of uncertainty. We know enough to say within that range of uncertainty that we can get thousands of megawatts on the demand side.

Why are we not thinking of efficiency megaprojects? A few billion dollars on the demand side is going to do quite a bit, and we know that it is going to do quite a bit. There is lots of American experience and there is lots of experience in other jurisdictions that tells us we can have a big impact on the demand side. We do not know to the last decimal point. We never will know to the last decimal point. We do not need to know. We do not know on the supply side to the last decimal point. There is no barrier I see to making a major policy commitment to demand side in the form of dollars right now.

Hydro has acknowledged there are thousands of megawatts that are cheaper than new supply, on its own estimates. Fine; let's go for it. We are talking the same kind of reliability, I think, as we have for building new power stations of any kind. So continue the process: lots of analysis, let's do it. I am an academic, I am never going to argue we do not need more analysis, it would be conflict of interest, but we certainly do not need more analysis before we can do anything.

Mrs. Grier: Okay, but I am one of those who is sceptical enough to feel that if Hydro came in here, it could probably prove to us that it would be much cheaper to build another Darlington and that we really ought to be doing that. There have been times in the past when they have done that.

Dr. Robinson: Yes, but they are not—

Mrs. Grier: You would not suggest that decision perhaps be made now in anticipation of this review, so how can you justify saying we know demand side is cheaper and make that decision ahead of this review?

Dr. Robinson: It is not so much that we know demand side is cheaper, but we know, with the equivalent reliability that we know anything about nuclear, that it is there and available at some cost in a range that is roughly consistent with new supply. That is probably all we know, but that is enough. We do not need to know more than that. We do not have to know it is exactly half a cent cheaper. That is magic numbers. We would be fooling ourselves to think we are ever going to know that it is exactly 0.35 cents per kilowatt-hour cheaper. Forget it; you do not get that kind of certainty in any real world situation.

We know it is roughly much closer than that, the same as new supply. Hydro itself argues that. I do not particularly believe Hydro's nuclear numbers. I think they are too low—I agree with the advisory committee on that—but it does not matter. We are talking about roughly the same costs anyway, even at their 3.5 cents or whatever they are currently estimating new nuclear is going to come in at.

We know enough to know it is in that area, and that is all we are ever going to know. Probably in five years we will have a lot more information, but we will be going five years farther out again and there will always be that uncertainty. If we wait until we know the exact cost, we are going to have to wait until the time we are estimating has passed, and then it is a little late.

Mrs. Grier: I was interested in the comment you made about the difficulty with the kind of hybrid models Hydro is using, which it claims to

be its end-use study. I was struck by that when we had the presentation from them, that there was a mixture of econometrics and end use there.

Dr. Robinson: That is right.

Mrs. Grier: In addition, of course, the models that they have acquired are all from the United States.

Dr. Robinson: That is right.

Mrs. Grier: I am wondering if you would care to comment, first, on what the implication is that they are from such a different jurisdiction; and second, if they do not use those, how much longer do we have to wait before they can do real end-use planning because they do not have equivalent data here?

Dr. Robinson: There are two dimensions to that, the data and the modelling side. The data is really bad but it is really bad everywhere. Nobody has really good end-use data because, as a country, we have spent 40 years building up a big national and provincial statistical database that is economically and financially oriented. We have never spent the same kind of resources building up a physical database, so that is a problem everybody has who wants to do this.

As to the models they have bought from the US, I do not think it is a problem that they are from the US because Hydro itself is going to have to recalibrate them to Canadian conditions. I have perfect confidence that they will do a good job on that if they are given the resources internally to do that. I think they have done that for two of the three now, virtually to complete the residential and commercial; I think they are still working on the industrial one. I have no doubts that they will do that properly.

My problem is that by having econometrics and end use mixed together, I do not think you can any longer do the kind of simulation work that is required, unless what you are doing is just using the econometrics as a kind of constraining mechanism, so if your end use takes you out here, it will tell you, "That is going to really be ridiculous in terms of these economic variables, so it won't work." But if they are going to use it to actually try to predict the most likely level of electricity demand, I do not think it is a very useful exercise. I am subject to be corrected on the exact structure of these models and how they will be used. My point was that, in general, combining those two approaches, a predictive and a nonpredictive approach, seems to have them work against each other.

Mr. Adams: I just have a comment and then one very short factual question. The comment

has to do with my supplementary to Mrs. Grier's interjection. I am still not convinced that the end result is any different in the method you describe, although I am quite willing to believe that it is perhaps a more creative way of getting there. If you look at what are numbered here exhibits 3-1, 3-2 and 3-4—I think there must have been some other number you had in sequence—your charts of the planning process, I see load forecasting disappearing because you have moved one of the boxes down and called it “supply-side alternatives.” I have this gut feeling that all of that left-hand side of the first diagram is still in there on the other one, but I do not want you to comment on that at all.

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Dr. Robinson: Okay.

Mr. Adams: Could you very factually explain to me again the “Load and Capacity Comparisons” diagram, which you mentioned somebody called Ralph—

Dr. Robinson: Ralph Torrie.

Mr. Adams: Could you just say to us, as clearly as you explained so many other things, what that diagram means.

Dr. Robinson: That diagram takes us from the Ontario Hydro 1985 load forecast, because we were doing this over a year ago, and the system-planning, bulk electricity system expansion document they issue every year, it takes what they call the “planning firm load,” which is essentially the load Hydro has to meet, so it is their total load minus interruptible power and minus the electricity they use themselves that they could not use. So it is essentially what their customers demand. That is the red line, out to the year—

Mr. Adams: By the way, it is not coloured on here, so that is the squares.

Dr. Robinson: That is the line with boxes, the bottom line of the two. The top line is what they call their “load-meeting capability,” which is their estimate of what they are going to have in place minus retirements, and new additions, how reliable it will be and how much it will produce, how much electricity they are going to be able to produce reliably. You can see that from a big surplus in 1985, by the end of the century we are out. If you continue those lines in roughly the same direction they are going, you can see we get a deficit.

What we did is say: “For that last right-hand red box, the top part of the bottom line where the two lines intersect, let's take all the activities out of that, which is numbers of people, numbers of

households, numbers of retail stores, hospitals, universities, industry of various kinds—not much transportation uses electricity—all the physical things we do from their own Hydro model”—the same ones that underlie that forecast—“and let's ourselves attach electricity-use numbers to them, based on certain assumptions about what is cost-effective and what is technically feasible. Multiply all those human activities times the electricity use and see where that gets us.” This is an example of this bottom-up approach I am talking about, and it got us to that star, that little cross.

Mr. Adams: It is potential savings that you think are feasible.

Dr. Robinson: That is right. They are savings that are certainly technically feasible, which we thought were cheaper than—I think our cost test was five cents a kilowatt-hour, based on a month or so of work. This is not the definitive conservation study; this is a rough and ready first cut. But you can see that whereas the load forecasting process got them out to something in the order of 27 gigawatts—27,000 megawatts—we ended up at about 16.5 or 17 gigawatts. It got us to quite a different place.

They spent a lot more time and effort than we did, so they are not comparable in that sense. Ours is not an equivalent level analysis by any means. If Hydro had done our analysis with the same level of effort, it may not have ended up at exactly that point. My point is simply that a first cut of that kind of analysis gave us a very different type of result.

Mr. McGuigan: I have a very short statement. You have a disciple here in myself because I have been saying these things throughout the committee. Not everyone recognized that, but I am just saying that it is political. Do you recognize the terrible political dilemma there is for political people who are carrying out such a process?

For instance, we heard yesterday from one of our presenters that the real loss in households now is through the walls—we used to hear it was through the ceiling, but now it is through the walls—and instead of two-by-four studs you need two-by-sixes. In Ontario, we do not have any two-by-sixes. The wood we are cutting up north is of a certain size, small, and it only has two by fours in it. So we would be putting out a decree, “Thou shalt not put two-by-four stud walls up.” But there are no two-by-sixes in Ontario. We would have to import it from someplace else instead of two-by-fours.

All through the whole thing, I think you are absolutely correct that there is a huge amount of savings to be made out there. It is all predictable and it does not have bad environmental results and so on, but you would require some of the moral equivalent of war on the part of all three political parties. You would have to have all three political parties agreeing on such a path.

Dr. Robinson: To choose something that according to the utility's own evidence is the cheapest route to go? It has always seemed to me that there is an asymmetry here. We do not require a moral equivalent of war to do things on the supply side that turn out to be just as wrong or just as disastrous, but somehow we do require it on the demand side.

I think it is partly because there is a whole new ball game. It is all these new factors that, typically, we never paid any attention to from a policy-making point of view. In fact, I do not think it is a call to arms to the populace to wear sweaters and turn down thermostats at all. It is building into the structural characteristics of society through things like building codes, house labelling and so on, things the public generally agrees with, which are saving energy—a very popular thing—and saving money.

Mr. McGuigan: Again, going back to saying in the building code that you cannot use two-by-fours, that you have to use two-by-sixes, you do not have two-by-sixes in Ontario. Then, just leaving that, it seems to me the big saving is retrofitting. It comes under retrofitting. That is a real minefield.

Dr. Robinson: That is right.

Mr. McGuigan: I would love to do it, but I point out that it is a minefield.

Dr. Robinson: But think of it as a home owner, just to pick residential, which is a fairly small piece of it. What is the biggest obstacle to making your house more comfortable, quieter and cheaper to operate? As a home owner and someone who has looked at some of the literature, I think people know there is something out there. They know they could probably do something. But they do not know what they can do. They do not know whom best to talk to. They do not know if they can trust companies that offer all these services. There is just a big barrier even before you get to cost.

I do not think people would object. For example, in Portland, Oregon, they passed an ordinance a long time ago saying that when you sell your house, it has to be weatherized to this standard. Everybody who sells a house has to

have it weatherized to a certain standard. That was not as unpopular as might be expected mainly because everybody had to do it. People could see this was consistent, that nobody was being singled out.

Moreover, the purchase price of the house went up, essentially by the cost of the weatherization, because every other house also had to build it into the cost. That kind of program was mandatory. Hydro says, "We do not want mandatory programs." I have not seen public opinion polls from Portland, but it certainly seems to be a successful measure. I do not think there would be a lot of opposition to that kind of thing.

Mr. McGuigan: That was under the scenario of huge, escalating energy prices.

Dr. Robinson: Yes, absolutely. But again, I think if you have equity, if everyone can see that everybody else is being put through the same process and that there is a net gain, as can be demonstrated within the uncertainty range we talked about, I do not see that as being really politically unpopular. I recognize that has to be a factor or will be a factor—whether it has to be or not—in the decision-making process. It seems to me that when we have a government whose ministry is saying conservation is our number one priority and it is the focus of our attention, then there is a bit of inconsistency in not actually taking the steps necessary to make that real as opposed to rhetorical.

Mr. Passmore: Just a quick question, again on this differentiation you are making between the two ways of approaching it: is it when you take the end-use model approach, looking at electricity services, that you may end up providing those services with different technologies than you would have otherwise?

Dr. Robinson: Yes. With the predictive approach, you have already assumed how the demand is going to be met. Then you have to change those assumptions. It is very hard to know what to change, what you have already changed and what is built into the model that you did not know about and so on.

With the bottom-up method, you know explicitly every step. It may well be that the actual processes you choose are different from the ones you would take if you took the subtraction route. To go from up here down, you might take quite different steps than to go from down here up. It remains to be seen. It has never been done seriously. We do not exactly know.

Mr. Chairman: Dr. Robinson, I would like to thank you for coming before us. I think you have

caught the committee's attention, as you noticed from the interjections. The chairman gave up attempting to keep order in the committee.

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Mrs. Grier: We have moved from Hydro 101 to Hydro 102.

Mr. Chairman: We thank you for coming in. I think you have given us a great deal of food for thought.

Dr. Robinson: Thank you for having me.

Mr. Chairman: The next witness before the committee is Ted Muffitt of W. C. Wood Co. Ltd. Mr. Muffitt, perhaps you could come forward.

For the benefit of the committee, W. C. Wood Co. is a manufacturer of high-efficiency refrigerators, located in Guelph. We have asked Mr. Muffitt to come today to speak to us a bit about manufacturing high-efficiency appliances and tell us a bit about his company, how that company sees the market before it, and perhaps talk about the problems and constraints Wood sees in that market, and give us some insight into the problems a manufacturer faces and some thoughts perhaps as to how the market for high-efficiency appliances could be improved.

Mr. Muffitt, I will turn the floor over to you. Perhaps you could start by telling us a bit about Wood and then about how you see the market.

W. C. WOOD CO. LTD.

Mr. Muffitt: We are very pleased to respond to the invitation to attend here. I did not realize until I actually got here that we were slotted into a demand management category but as it turns out, that is what we had chosen to speak about anyway. That is probably what we know best.

W. C. Wood Co. is extremely pleased to participate in these hearings and before such an important body in Ontario. As you have already indicated, we are located in Guelph, Ontario. Currently, we have over 600 employees. This is our 58th year of operation. We export approximately 30 per cent of our output to the United States and elsewhere. To our knowledge, we are the only profitably independent Canadian-owned producer of major appliances. To our knowledge, everybody else is either a subsidiary of a foreign multinational or is not profitable.

Mr. Chairman: Does that imply they may soon become a subsidiary?

Interjection: Some are both.

Mr. Muffitt: Some are both. Our company has been both a pioneer and a leader in energy-efficient home appliance production,

particularly in freezers, for at least a decade. To illustrate this competence, we refer you to an energy-efficiency program. This one was undertaken by the Bonneville Power Authority, and you may have had some other presenters illustrate that. What they have done is identify the top 15 per cent of energy-efficient refrigerators and freezers in the US marketplace. Of the 49 models listed in their qualifying models, 29 are produced by our company.

Mrs. Grier: Under what name?

Mr. Muffitt: Under a variety of names. We produce on a private-label basis for such people. We currently produce all the chest freezers in the United States under the General Electric and Hotpoint labels. We have produced them under the Panasonic label and we have done some for Sears Roebuck under the Kenmore label in the United States and it is currently expanding; also under our own name, the Woods name.

The energy efficiency ratings have been compared with all other manufacturers under a test specification method identified by the US Department of Energy, endorsed by the Association of Home Appliance Manufacturers of the United States and audited from time to time by environmental test laboratories in the United States.

Our company has achieved this position through a purposeful program of engineering and design, component selection and detailed attention to manufacturing processes. In addition, we have participated through the Association of Home Appliance Manufacturers of the United States in the development of energy standard legislation in the United States and in the adoption of such regulations.

That is all by way of trying to present our credentials, I guess.

Despite the considerable investment by our company in this energy consumption, we have to tell you that very few additional home freezers have been sold as a result of the energy efficiency. Frankly, we strongly believe that the typical North American consumer has been desensitized to the various alarm bells of interest groups, including the energy conservationists. They are just desensitized.

Consumers are confused. They are confused by such things as declining gasoline prices in the United States following a period of alleged shortages, daily fluctuating prices of gasoline in Canada and such simple matters as why the largest users of electricity receive the most favourable discounts.

We believe that a sense of cynicism has set in in the whole area. The cynicism has been reinforced by the absence of an overall plan to educate consumers on how to interpret energy ratings. I have not done a study, but my estimate is that not one in 10 people understands what a kilowatt-hour is. For example, it would be interesting for this committee to determine the public understanding of what constitutes good energy consumption for a refrigerator, based on its kilowatt-hour-per-month rate of consumption.

We have had a program in this country for several years. I have a background as an engineer, as a manufacturer, as a retailer and as part of the government on the bureaucratic side. Frankly, people do not know what those labels mean. They do not know which ones are good and which ones are bad.

My personal experience after 25 years in this industry, including direct sales at the retail level in the United States, Canada and abroad, is that the whole issue of energy conservation ranks well down at the bottom of the individual consumer's personal priorities. Unfortunately, that is the case. The manufacturers and distributors of household appliances have likewise become cynical.

In the late 1970s, the federal government forced upon the industry an EnerGuide standard for major appliances. Despite some justifiable resistance at the outset, all appliance manufacturers ultimately embraced the program, at considerable extra expense to themselves and the customers. In the last half of the 1980s, a new government no longer feels this program is a priority, despite the fact that legislation exists covering its enforcement. As a consequence, the EnerGuide labelling system has become a toothless tiger, with very little relevance in the marketplace.

The major irritant in that whole EnerGuide program is that the glue that is specified on the label is almost impossible to tear off the unit. That is the impression that most consumers go away with from that program.

Further, in the area of some other appliances, such as dehumidifiers and humidifiers, which have ratings in terms of quantity of moisture addition or removal, there are no Canadian standards whatsoever. As a consequence, a number of producers have falsified their ratings through a thinly disguised insinuation of compliance with US standards. A seven-gallon humidifier in Canada, advertised as such, can put out

anywhere from four to 15 gallons. Most of it is in the lower category.

In another area, the Department of Energy, Mines and Resources is considering passing regulations with regard to the efficiency of home-heating apparatuses for the regulation of allowable air leakage in homes.

None of these programs is achieving the desired result, no matter how worthy the original cause. On the contrary, the consumer is becoming ever more confused by regulations imposed by foreign governments, the federal government, provincial governments and others.

The foregoing is not to suggest that our company has not benefited from its efforts towards energy conservation in its products. On the contrary, we have benefited from attention to this area. However, the benefit is not derived from receipt of higher prices, more sales or better energy consumption. Rather, our focused attention has resulted in the development of products with differentiated appearance and higher overall quality. That is what the consumers are after. It looks different and it works better in their terms, in quality, finish, fit, form.

It is on this basis that a number of channels to market have chosen our product in preference to competitor products, and not because of the product efficiency. It is because it looks better and it has impression, the door-slam psychology of an automobile.

Mr. McGuigan: This does not leak. Is that what you are saying?

Mr. Muffitt: A certain percentage of them will leak, but ours has a lower rate than is usual in the marketplace. So the retailers who carry this product to the marketplace favour it.

A good example to illustrate the public confusion of government intervention arises from the federal government program to force conversion to the metric system. Manufacturers like ourselves have spent considerable sums of money in the conversion process and in the retraining of our people. Despite this considerable investment of time and effort, we are now expected to embrace a new initiative of free trade with the only major world power not on the metric system. Is it any wonder we are confused when dramatic shifts in priorities occur?

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This committee will be aware of the programs undertaken by a number of states in the United States relating to energy-efficiency programs for home appliances. These programs range all the way from subsidies for purchasing newer, more efficient models, to publishing of various manu-

facturers' results, to cash payments for surrender of older, inefficient models.

To my knowledge, none of these programs has had a substantive or lasting effect on the consumption of energy. On the contrary, they tend to be modifiers of existing demands which will either accelerate or postpone purchases at best but have not been effective in altering the basic purchasing pattern of consumers. The fact of the matter is, if I can get a discount today I might buy today; if I expect a discount tomorrow I will buy tomorrow.

In fact, in some instances, government intervention through incentive programs has actually caused electrical consumption to rise. Some states and their power authorities have granted incentives for purchasing newer, more efficient refrigerators to replace the older, less efficient ones. Customers have responded to these 10 per cent to 15 per cent incentives with the purchase of new units. However, the older, inefficient units, instead of being withdrawn from service, are in many cases destined for basements or garages as beer fridges, resulting in a net increase in electrical consumption.

There is no program of which I can conceive that would effectively allow a provincial jurisdiction to regulate the marketplace that will ultimately benefit the consumer of major appliances. There is no standard, unless uniformly embraced by all of the United States, each of the separate states, all of the provinces and each province separately, that will be effective and benefit the consumer.

The products we manufacture are essentially the same, whether installed in the home of an Ontario consumer or in the home of a consumer in San Diego. For this reason, we would strongly recommend that this committee oppose any rule-making or regulatory measure destined for inclusion in Ontario or Canada without being part of a North American undertaking. On the other hand, we would strongly endorse your participation in such an effort, so that our company could be scored and measured against the same performance criteria as all our competitors. We do not mind competing; we are not afraid to compete; what we need is a level playing field.

Should the committee or the Legislature determine that energy conservation is a matter of such importance to this province that action must be taken independently of the rest of those jurisdictions, we believe the type of action available to you is obvious. The only conceivable corrective mechanism will be through the rate structure.

If the committee deems that a reduction in energy consumption is desirable, then we recommend that you increase the rate. That will provide an economic incentive for people to implement on their own. Let the market do what the market is supposed to do. Any form of intervention in the market system will meet with failure if it is unique to Ontario or if it imposes burdens on Canadian producers that must compete in the US market and against imports in Canada.

I will just take a diversion. This study crossed my desk this morning. It only just arrived. It is a survey done by Better Homes and Gardens magazine. Many of you will be familiar with that title. They did a study with a consumer panel, for information for some of their readers and advertisers, on why consumers made the choices they did on particular products. This was done in April 1988, was just issued and arrived on my desk today.

This is interesting. What they have done is give a 76-page questionnaire with 221 questions in 25 different subject areas to 500 nationally distributed members of a 1,000-member panel. They received 403 completed questionnaires. It talks about refrigerators, ranges, ovens, cook tops and microwave ovens. Nowhere in this study has the issue of energy ever arisen, not once.

W. C. Wood Co. strongly urges this committee to fully understand the implications and ramifications of the so-called Montreal accord as it relates to manufacturers of home appliances, particularly in the area of refrigeration. You get a lot of fancy long words here; you can end up with fully halogenated chlorofluorocarbons. It does not mean anything other than the Freon that goes in the refrigerator.

These ramifications and implications are far-reaching, both from an environmental point of view and for the industrial economic base of the country. The Montreal accord deals with a wide array of applications of these compounds but impacts this discussion as it applies to refrigerators and Freon used in the refrigeration system for all refrigerators and freezers in North America, with the possible exception of absorption type, but that is a very, very small number.

The scientific community has strongly made the case, and we believe it, that these CFCs are causing deterioration in the atmospheric ozone layer that provides protection to the earth's surface. As a consequence, measures are being taken to severely restrict the availability of such substances over the next few years.

By the way, this activity of the environmentalists is directly in contradiction to the goals of the energy conservationists. I do not want to choose a side here—I am not sure that there is a moral high ground on this particular issue—but it is very important that it be understood by a committee of this type.

At this time, there are no available substances which can do the same job as Freon at an acceptable cost and in an energy-efficient manner. Consequently, this committee probably finds itself in a direct conflict with environmental concerns in the area of household refrigeration and energy conservation in the area of demand management.

In some instances, society has tended to develop an all-embracing trust that the scientists will develop solutions to all life's problems in an acceptable time frame. This faith is particularly evident among those who tend to crusade on behalf of the ozone layer.

Our company, with over 40 years experience in refrigeration, selling to some of the largest refrigeration producers in the United States and sourcing from our refrigeration suppliers on a worldwide basis, and through continuing discussion with chemical product producers, has no knowledge of any viable replacement for the offending CFC substances. On the contrary, if such substances indeed exist, they are being closely guarded as trade secrets. Under the current planned stringent control for these CFC materials, a first company to develop and cost effectively apply a new technology will render all competitive products obsolete.

In view of this concern, W. C. Wood Co. strongly recommends that this committee avoid the pitfalls of placing itself, the Legislature, the people of Ontario and the industry in Canada into a role conflicting with the regulations from other governments and other bodies with regard to the environment on this issue. I just caution that I do not think we have the answer. You are on very slippery ground here. I urge you to understand how slippery it really is and how vulnerable the industry is in this case.

I would like to digress for a moment into a discussion of the structure in Canada by which energy conservation regulations are being imposed upon the citizens. I refer in this case to the Canadian Standards Association, known as CSA, and compare it to the situation in the United States, where the Underwriters Laboratories is known as UL.

The Canadian Standards Association has a technical capability for assessing products that is

unmatched in the country. In addition, it provides an effective forum for discussion of various technical issues related to Canadian citizens. However, its primary and historical purpose has been to evaluate products and through the issuance of a CSA sticker qualify products as meeting acceptable safety standards for Canadian consumers. This is a valid and worthwhile and essential role. The Underwriters Laboratories in the United States has the same function.

In the past few years, CSA has been approached by various branches of government to be the forum for developing and implementing standards for products and system which have no relevance to safety. Many of these new activities relate to energy efficiency.

The most troubling feature of these new initiatives by CSA is that no provision has been made for its ongoing funding, and subsequent governments with subsequent priorities have withdrawn funding at later dates. What has happened in some of these cases is that they create a great tempest, new regulations come on, and there is no provision for following it through, despite the costs that people have incurred.

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This activity is placing some doubt on the overall credibility of the CSA at the least, but also provides penalties for Canadian producers and higher costs for Canadian consumers through the perversion of its basic purpose. Such a situation is not evident in the United States where the UL has retained its traditional role and other activities for other purposes, including energy conservation, have been handled in other fashions. As a consequence, the UL is emerging as a pre-eminent authority. We are building too much bureaucracy around somebody who has a technical competence for a very good and worthwhile purpose and trying to pervert that purpose.

We would advocate that this committee seek means other than through CSA for the implementation of its energy conservation goals. More particularly, if energy conservation measures are deemed, necessary, a separate, independent measurement group should be established and funded solely through testing and evaluation revenues of both domestic and imported product.

No discussion on energy conservation would be complete without a consideration of its impact on Canadian producers under a free trade environment with the United States. Simply put, no Canadian producer of major appliances will survive in a free trade environment unless that

producer can meet all of the standards for products in the United States.

If the standards in Canada are different from the standards in the United States, it makes simple economic sense to produce the bulk of one's requirements in the United States and make exceptions for the considerably less significant volumes required in Canada, and not the other way around. As we see it, government authorities in Canada have three options: (1), take no action on energy standards; (2), set standards identical to those in the United States; (3), set standards different from those in the United States.

The only viable long-term alternative for Canadian producers is to operate to identical standards as in the United States. It is our view that this committee should adopt the position of co-operation with the United States regulatory system, to ensure that the minimum overall costs associated with the administration of regulations accrue to both Canadian consumers and Canadian producers.

Canadian producers simply cannot afford additional penalties, just for being Canadian, under any sort of a free trade environment. Such an activity might result in universal energy consumption labelling standards and the recognition of each other's measuring techniques and acceptance of the policing bodies. Fragmentation of such activities would most certainly be ineffective.

If this committee adopts the position that energy efficiency will be implemented through the imposition of regulations, then we strongly urge that this activity be self-funding; specifically that a testing and policing authority be established, independent from government, independent from CSA and independent from the industry, and relying solely on its revenues from testing of products for its survival.

In this way, neither the consumers, industries nor the taxpayers will be required to pay for hidden costs. Essentially, we see it as the accountant of energy, if you like, who develops his fees from keeping score or develops his income from keeping score, and that is his only role. If it is a bit too expensive, then you will know exactly what it is.

In the event that this committee adopts the position through regulations, we believe that special care must be taken with regard to import products. Currently, under the federal sales tax mechanism, products imported to Canada have a preferential treatment over products manufactured in Canada. This occurs through the federal

sales tax being applied at the first level of trade. The first level of trade of an import product is when it arrives at our border; the first level of trade of a domestically manufactured product is after all its marketing costs are incurred and transferred to the retailer.

It is becoming increasingly difficult to compete in the consumer marketplace with eastern bloc countries that operate within an economic system considerably different from ours and whose primary objective is the sale of product to earn foreign exchange. It is equally difficult to compete with so-called developing countries in the Far East that have continually deferred their social safety-net legislation for their population, resulting in lower costs. In short, Canadian producers simply must have the level playing field that we talked about earlier. We can compete with anybody if we play by the same rules.

In summary, we strongly believe the energy conservation measures can be most effective for home appliances by simply increasing the cost of electricity to consumers, letting the marketplace work and consumers responding to their own best self-interest. However, if this committee seeks to intervene in the economic structure of the industry, we would advocate that the committee adopt the position of developing a unified North American standard and that such a standard would apply equally to all products regardless of origin.

Further, any activities recommended by this committee should be self-funded through revenues generated by the regulatory authorities on a fee-for-service basis and should apply equally to domestic and imported products.

Thank you for your patience and attention.

Mr. Chairman: Thank you very much. I believe there are some questions from the committee. Mrs. Sullivan.

Mrs. Sullivan: Thank you for coming today. I want to pursue a couple of the comments you made, one of them relating to the customer inclination not to use conservation as a method in consideration of choice of appliances. It seems to me that in the absence of government regulation, given that customer proclivity, the appliance manufacturers probably would not have chosen to manufacture more energy-efficient appliances. As a consequence, while you are critical, to a certain extent, of some of the conservation requirements, whether they are regulated or legislated, indeed, the efficiencies would not have occurred without government intervention. Would you agree with that?

Mr. Muffitt: I guess everything is a matter of degree. I do not think I agree with that in principle.

The people who have done the most studies on that are in the United States. It is quite a different situation there. Quite a lot of work has been done demonstrating what the natural progression of energy saving has been over a period of time. In fact, for our products, there is some 47 per cent improvement since 1972, something like that. It has occurred elsewhere.

I guess you can claim the last 10 per cent of it has been some success as a result of the regulations, but I think it seems to be going the other way around. What happened was that there was a big ground swell of activity that came up. All the regulations came on. The force of government came down. People had to respond. We were going to do these programs, and nobody wanted to be number four on the list. Everybody went after becoming number one. Well, now that we are number one, we find that the rules have changed and the government does not think it is important any more. You kind of feel a little let down on that.

Mrs. Sullivan: You can change the government.

Mr. Muffitt: Well, the government has changed, and it is the new one that does not think it is important.

Mrs. Sullivan: Right. Well, change it again.

Mr. Muffitt: We cannot do anything now about the ones that were done.

Mr. Charlton: We are going to fix that.

Mrs. Sullivan: That is right.

Mr. Muffitt: The point is not whether it is one party or another party; it is intervention in the system. What is happening is, now having achieved number-one status, it is no longer relevant, because the guys who launched it are not backing the program. So we are in the enviable position of going out and saying: "But we've got this really great product and it's so energy efficient. Buy ours," whereas the guy down the street is saying: "Don't pay attention to those guys. Ours is cheaper." The customer goes with his dollars in this case. He is deciding, in many cases, that he wants a less costly product. We are not talking about junk. He is not buying junk. He is buying a less efficient product that meets his needs rather than paying for the more expensive one.

To answer your question: yes, I guess we have done that. I guess there is some measure of improvement that has occurred as a result of

those regulations and that intervention, but I do not know where we sold more product because of it.

Mrs. Sullivan: You are clearly a company with a global product mandate, and the harmonization of standards with America is extremely important to you, as I understand it is with the companies that are not even making a lot of money.

In Ontario, of course, we have just introduced the new Energy Efficiency Act, and the regulations and standards are now being developed, with industry consultation and so on. I am interested in your comments about meeting American standards, when frequently American standards are indeed lower in some product lines than Canadian standards are. Perhaps we should in some cases be setting standards that are above the American. Where is the industry going to be coming from on that?

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Mr. Muffitt: Let's talk about freezers for a moment because that is where we spend a lot of our time. The United States market for freezers is about 1.2 million units per year. The Canadian market for freezers is 230,000. There are three producers in Canada that share the Canadian market. At the moment there are two US producers. We are in a free trade environment. Consumers are going to have choices. I do not know how you can shut the borders.

On that comment, even if the American standards are lower, that does not make them worse. They have gone through a spirit of compromise and negotiation and melding of various and diverse views. In fact, the standards that are emerging are the best compromise that could be achieved between those people who are advocating environmental concerns and those people who were advocating the economics of production, like manufacturers.

Whether you think they are higher or lower, it is the result of about five years' worth of detailed compromise and negotiation between two radical extremes. I think they are darned good standards because they arose through that process.

If we went through the same kind of process and took another five years to do it and ended up with something different, I have to tell you I think that some of the people in this industry would decide to produce in the United States and make Canada the exception on the line, rather than the other way around. I do not think lower means worse.

They have gone through a very aggressive period of compromise and settlement between

various and diverse groups. This is the common consensus that came out that all the parties could accept. I think it is good.

Mrs. Grier: Do I take it that you got into producing these energy efficient appliances because of the EnerGuide program? Was that what led you to it?

Mr. Muffitt: We were looking for the edge in the competition. We felt at the time back in the 1970s—that it all started about 1975—that if the government really was going to do what it said it was going to do and make consumers aware of the benefits of all this good stuff, that clearly there was a place where we could be out in front. And that is what we decided to do.

If the government had decided in its wisdom that it was going to hand out awards for the nicest colours or that it was going to hand us out awards for the smallest units or the fastest freezer in town, we would have done that, too. The point is that we targeted in on the issue that we felt was going to be identified to give us the differentiation in the marketplace.

Mrs. Grier: And so, are all your products high efficiency?

Mr. Muffitt: Yes, they are.

Mrs. Grier: So I take it then, when I asked you what brands you marketed, such as a General Electric fridge, some of them could be made by you and be highly efficient and another model under GE could be made by somebody else and not be as efficient?

Mr. Muffitt: That is correct. In fact, to expand on that, on a level playing field that is the qualification. We have already made the capital investment and have products coming down the line that meet the standards that are required for 1993. Some of our competitors still have to make that investment. So to that extent, all other things being equal, we have an advantage.

Mrs. Grier: When you say 1993 standards, you are referring to US standards?

Mr. Muffitt: That is correct.

Mrs. Grier: I do not know what their regulations are, but are they federal standards?

Mr. Muffitt: Yes, they are. They are California standards, which have become federal standards. They have passed a rule that nobody else is allowed to make rules, which is a major—

Mr. Dietsch: "It's my game and I'll call the shots."

Mr. Muffitt: There is a lot to be learned from what they have done. Whether you think the outcome is good or bad, the process that they

went through certainly provided for consideration and inclusion of a widely diverse range of opinions and views. So I think they are good results.

Mr. McGuigan: Following along with Mrs. Grier's line of questioning, I think I detect you are saying that when you went to higher energy standards automatically bound up in energy standards was higher quality.

Mr. Muffitt: Yes.

Mr. McGuigan: In other words, you could not make a freezer that was of higher quality and have lower energy standards. I suppose in the extreme you could have made it, but they go hand in hand. When you sought higher quality, this meant better-fitting lids and a tighter box. Everything about this machine was of better quality, and I think that should be understood.

Mr. Muffitt: Yes, it is a byproduct of it, no question about it.

Mrs. Grier: Do the US manufacturers that manufacture in Canada manufacture only for the Canadian market?

Mr. Muffitt: Yes, in freezers that is true. In other products, there is some rationalization occurring.

Mrs. Grier: Have you been part of the discussion with the Ministry of Energy? We heard from them today that they were working to develop the standards under the new Energy Efficiency Act and had done work with the industry.

Mr. Muffitt: Yes, the technical people in our company are members of that committee. I personally choose not to participate.

Mrs. Grier: Okay, thank you very much. It was very interesting.

Mr. Runciman: When we went through the debate on the Energy Efficiency Act, I guess I thought one of the reasons in going in that direction was to have uniformity throughout North America. But with regard to the point that was raised this morning—about standards being developed, perhaps in isolation, if you will, in Ontario—I can understand your concern, and I think we should all be concerned about that and the impact it might have.

You have indicated, from your years of observation, that you are not too enthusiastic about government encouragement in any way, shape or form, that usually the drawbacks outweigh the positives. Other than rate increases and their political drawbacks, as you can well appreciate, I am wondering if there are any

programs or initiatives you have seen over your years of observation that the government could undertake that might be helpful?

Mr. Muffitt: The company position is as we have presented it. My personal position is I spent some years with the federal government, involved in an industry, trade and commerce role, and at that time was firmly convinced that intervention into the economic system could be beneficial to the population of the country. I guess the thing that maybe I personally felt I learned is there are a lot of other people who are smarter than I am who set the environment. They will respond in their own best self-interest. So the answer is, I really do not. If you want to save electricity, increase the price and people will respond.

Mr. Runciman: There are other implications to that.

Mr. Muffitt: I am sure there are.

Mrs. Sullivan: What would that mean to the cost in your production line?

Mr. Muffitt: You have to consider what is available in the marketplace. Our company is a Canadian company, has been for 58 years. We really do not want to go anywhere else, but if we have to we will, because we are going to survive. It is not just the energy that is more expensive here; it is a lot of other things. We pay our people, including myself, a lot more than our colleagues in the United States. Our business is meeting the customers' demands; our business is not particularly employing people of particular areas. What would it mean to us? We might find that we would go someplace else.

As I tell you, energy consumption is a fairly minor portion of the whole thing. You might decide that you were going to have an energy consumption standard for Canada based on that. You would have a problem because what you would then do is penalize Canadian production against import production. That was one of the issues I mentioned, that if you are going to charge Canadian manufacturers more for their power, then you better figure a way of adding that premium on to the imported product here, too.

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I was at a meeting about two months ago with a senior person in a major Canadian retail chain, and his biggest dilemma on that particular day was how to answer some of his suppliers' concerns as to where they should locate their future plants, because if they are currently supplying the Canadian requirements and they can do it cheaper from South Carolina, why

would they not do that under the free trade environment? I do not know the answer to that. If I can do it cheaper in South Carolina, why do I not?

Mr. Runciman: I take it you are not operating under a free trade arrangement now in terms of your product?

Mr. Muffitt: No, but we would welcome it as long as the rules are the same for both sides, the costs are the same. We welcome it.

Mr. Runciman: You are supportive of it?

Mr. Muffitt: Absolutely.

Mr. Runciman: I was just curious about the Montreal accord. You mentioned the concerns about Freon and trying to move away from Freon in refrigeration products. You say there is no safe alternative. What about ammonia, which I always thought was a—

Mr. Muffitt: That is a different kind of system. That is the one which requires liquid circulating through the system.

Mr. Runciman: Is it less energy efficient?

Mr. Muffitt: Yes, it is. If you want to build a skating rink it works okay, but not for a refrigerator.

Mr. Runciman: It was used in refrigerators at one time, was it not?

Mr. Muffitt: The answer is no. Our technical people tell us no; it is not the answer.

The other thing that is interesting too, of course, is that if you take the old units off the market, you have to dispose of them. Where does that Freon go? The answer is that there is no cost-effective alternative we know of. It is interesting, too, that if this does come on, I hope it does not obsolete the technology available in the plants that are currently established.

Mr. McGuigan: Mr. Runciman took my main question. I am an old "cold storage" man. I am wondering why you cannot use ammonia. You said you cannot use it, but you did not give us any reason.

Mr. Muffitt: Ammonia is involved with a liquid system, and what we—

Mr. McGuigan: It works very well in—

Mr. Muffitt: What you are doing is keeping the liquid from freezing by using ammonia. I would have to get you a technical treatise on it. I cannot give you the technical answer. Our technical people tell us it is not possible. That is the general consensus in the industry. I cannot give you a technical reason for that, but I can get one for you.

Mr. McGuigan: You did mention the absorption system, the little—

Mr. Muffitt: You see that now in some of these little carry-on cases people put in the back of their boats or in the back of their cars, which you plug into the cigarette lighter. You even see it in some bar refrigerators in hotels and so on, but it does not have the capacity for cooling.

Mr. McGuigan: Listening to the environmentalists on this, we are talking about the end of the world if we are destroying the ozone layer.

Mr. Muffitt: That is right.

Mr. McGuigan: We do have ammonia systems out there. I just retired one, an old compressor which was built back in about 1935 and was still running up until a few years ago. It used an absorption system. I think they call them Servo refrigerators. People use them up north where they don't have electricity.

Mr. Muffitt: I will get you the answer and send it to you. I cannot give you the technical reason. I could tell you that the body of opinion I am involved with supports that it is not a viable alternative and I will get you that support. Beyond that I would just be bluffing at this point.

Mr. McGuigan: It has always puzzled me, but this is the first time I thought to ask about it when we had someone here. That was the only question I had.

Mr. Passmore: Mr. Muffitt, do you pay less for electricity in Ontario than you would if you were in the US?

Mr. Muffitt: It depends on what part of the United States. Generally speaking, the answer is yes.

Mr. Passmore: In the discussion of the level playing field, what are the implications of what you should be paying for electricity in manufacturing in Ontario?

Mr. Muffitt: Most of the people we compete with are fairly significant size companies. Just to illustrate the point, one of the locations that General Electric has in the United States is in Louisville, Kentucky. That is one of their locations, and it happens to be their biggest, but they are the second-largest employer in the state of Kentucky, next to the government, at that one facility. They are able to negotiate some pretty favourable rates. Other factories do not tend to have that same concentration, but they are major users in particular areas and buy at favourable rates.

One of the things that we do, of course, in looking at the energy consumption statistics, is to

note that the amount that you can save depends on the amount that you pay. Some of the highest electricity rates for consumers in the country are in New York City; yet it is one of the biggest markets for room air-conditioners that exists, for one of the highest energy consumption units. It is also one of the most price-sensitive markets for refrigerators. It is one of the areas where if you want to sell some schlock merchandise, you can; yet it has the highest energy rates in the country. They are paying down there, the last time I looked, over 12 cents a kilowatt-hour in American terms. That is a lot of money.

Mr. Passmore: You discuss the free trade agreement and you discuss a level playing field. There are a number of American manufacturers who argue that Canadian electricity is under-priced. I am just trying to get a sense as to where you are coming from in respect to your comments on the level playing field, and yet electricity prices—

Mr. Muffitt: I am sorry, I apologize for confusing you. It is an area of regulations. I was not referring to the rate of energy at all. It is intervention into the system and regulations. If you were to impose regulations that we were required to meet in addition to meeting the US regulations, we believe we would be in a penalty. I was not referring particularly to the cost of electricity in that instance.

Mr. Passmore: Do you know whether any of your competitors in the US consider you to be paying advantageous electricity prices in terms of the component—

Mr. Muffitt: It has not come up as an issue. We do not have much of a forum to compare costs with our competitors, but we do have the opportunity to grill our suppliers.

Mr. Dietsch: In literal terms.

Mr. Muffitt: Yes. We know there are some areas in the total basket of items that US producers purchase where they have a modest advantage over us in Canada, not the wide margin that a lot of people tend to want you to believe, but I do not know where electricity is. We do not happen to have a supplier we can beat up to get that information.

Mr. Passmore: You mentioned in your earlier remarks that consumers do not know what a kilowatt-hour is, or very few of them do. Do you have any sense of what we are looking at in Ontario in terms of the amount of energy that is currently consumed by refrigerators and freezers, or have your people had a chance to look at

that? What sort of a consequential number are we discussing here?

Mr. Muffitt: I do not have that number because the total number is not relevant to our particular business. It is not something we would look at. Some of the studies that other people have done have indicated that refrigeration is the second-largest consumer of energy in a particular home, next to hot-water heating, and depending on the type of heating that is involved, it could be number two or number three.

It is not an inconsequential number. I believe it is a significant, a substantial number; it is one that can be reduced over a period of time if the consumer has the economic incentive to do so. It is considerable, number two and number three in the home.

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Mr. Passmore: But it is significantly reduced over time except that consumers do not make choices on an energy-efficiency basis. I guess if we go back to your earlier remark, the only way we are going to get them to make those purchases is if we dress them up pretty.

Mr. Muffitt: We think you should increase the rate to do it, but if you are not prepared to do that for some of the reasons that there are political constraints, I believe you should adopt the same standard that is available in the United States. Any other system penalizes the producers here. Ultimately, the total cost to the Canadian consumer will be higher.

We are headed towards a North American system. I hope that it will not be too many more years, that more of our consumers will be US consumers, as many as are now Canadian consumers.

Mr. Adams: I am sorry I missed a part of your presentation. It is very good of you to come. I heard the part about the consumer being desensitized to the sorts of things your company has done. Also, you mentioned that the consumer was ill-informed and, for example, did not know what a kilowatt-hour was and so on. It seems to me it is to your advantage that consumers be sensitive and also that they be better educated.

I have no political advantage in saying this, but in the middle 1980s—my riding is Peterborough—I was involved with a group called Energy Savers Peterborough, which is the sort of thing you may have heard of. The philosophy there was, in the stress of the times, that a community-based organization could heighten awareness—that was one thing—and actually could convey information such as what a kilowatt-hour is more

effectively than a province-wide, nationwide, continent-wide advertising campaign. My sense was, by the way, that it worked very well.

Looking at the community now, I can actually see the effects still rippling out, for example, on what is being taught in elementary schools and on models which are available, which were produced by volunteers in the private sector at that time, which are still in use in the schools. Kids are being taught from them and so on.

I have two real questions. One is what do you think about that sort of community-based effort to sensitize and educate? Second, do you think that, as a result of such efforts, your consumers are better educated and more sensitive than those in the United States?

Mr. Muffitt: Is that a good way to do it? I can only answer in the vaguest of terms. My children are better educated than I am. They are smarter. They know more things. The scope of the number of things they are exposed to is broader. They have a better base. I am not sure that in total, with all of this new information they have exposed to them, they are capable always of focusing in and applying it in a useful fashion. In any event, more is kind of better sometimes.

Yes, I think that is good. I think people should be concerned about that. They do a lot of arithmetic. If you can buy eggs for 60 cents for 12 and you can buy them at 80 cents for 15, which is the better deal? Energy is a part of that kind of discussion. I think that is beneficial.

Our problem, frankly, on this issue is that the world we live in, in appliances, is a factor of the guy who sells in the store. He only gets paid when he makes a sale. The more sales he makes and the faster he makes them, the more he gets paid. So he takes the least path of resistance to the sale. It is not in his self-interest to educate a consumer on the merits of energy conservation because he wants to make that sale and get on to the next customer. He does not see himself as the educator in the piece. What he has there is meeting his family's needs. He is not going to educate them on it.

Mr. Adams: I do not discount what you say. I understand what he is doing in the actual sale. It was a quarter million, I think it was you said, of freezers which are being sold in Canada. I am wondering whether, as a result of programs like that, which is a way of government being involved, whether there are not some of these quarter of a million—I think it was, you said—freezers that are being sold in Canada already are being sold because of your high standards.

Mr. Muffitt: There are some, yes. There is no question about it.

Mr. Adams: And this is not the case in the United States.

Mr. Muffitt: But we do not get any more money for them.

Mr. Adams: I understand all those points, but I just wonder whether there has not been some healthy government effect over the last 10 years.

Mr. Muffitt: Sure, there has. It has been some help; no question about it.

Mr. McGuigan: I was very interested in a comment you made about having perhaps produced to two standards, the Canadian standard and the American standard, to take care of what you ship over there, and if you have to do that that, it would probably be in your company's interest to move to the United States. That is kind of a free trade question. It seems to me whatever the product you are moving to the United States, you are still faced with making two standards.

Mr. Muffitt: Yes, you do, no matter what, but your exception is the minority part of your production in that case.

Mr. McGuigan: I do not see, in my mind, what real difference that makes to your production costs.

Mr. Muffitt: Well, it does. Every time you change over, it makes a difference.

Mr. McGuigan: In either case, you are going to have to make that change. Oh, I see, you make the product on the one line.

Mr. Muffitt: No. If we can be the third producer in the United States in a 1.2 million market, if we are as good as the other guys, we should have about one third of the business. That is more than all the business available in Canada, so that is what we want to do. We would like to get that. If there are only two guys there now, we would like to be the third one, but we would like to do it from Canada.

Mr. McGuigan: To get back to the specifics, the American producer who is producing to our standards, assuming we have two standards, has to make, presumably, a more expensive machine.

Mr. Muffitt: Yes, that is right.

Mr. McGuigan: He makes a more expensive machine. Right away, on both sides of the border, it seems to me you have the same equation, regardless of where you produce.

Mr. Muffitt: He is at an advantage when he imports it into the country, first of all, because of the federal sales tax.

Mr. McGuigan: But that is outside of our argument here, outside of our power.

Mr. Muffitt: It is part of the whole package. It is just one item. What I was referring to is, if you were going to impose regulations on the manufacturers as opposed to imposing regulations on the products, if we were required to meet a certain standard because we were a Canadian producer, then there would be very little incentive to stay.

Mr. McGuigan: I assume you would only have to make that higher requirement on the machine if you sold in—

Mr. Muffitt: If we made them both the same, we would be better off. We could sell more if we made the Canadian one the same as the American one.

Mr. McGuigan: That is the same when you cross the border.

Mr. Muffitt: Sure, but we can compete with them. There is an advantage for us making it the same. If we are going to have an exception for the smaller market, if to be North American competitive we have to have 30 per cent of the North American market in the three-supplier scenario, we are better off producing in the United States than we are in Canada unless we can capture a disproportionate share of the Canadian market. If the barriers to doing that are too great, then why do it? Let the Canadian market go and attack the US market. Let somebody else supply it. It is kind of an academic argument, anyway. The point is, if it is different, what you do is set your factory up to produce the majority of the production, not the minority, and everything else is a premium. Then we could be at a disadvantage in our very own market.

Mr. McGuigan: I am not a free trade person, but I have not heard any argument that would convince me that there is anything wrong with the playing field on either side of the border when on each side of the border you have to produce to that market's standards.

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Mr. Muffitt: If you have an exception to the rule, it may cost you \$1 to produce that exception in the United States. Because the volumes are different, exactly the same type of exception, could cost you \$1.50 to do that if it was on the Canadian side. It could be more costly to do it that way.

Mr. Dietsch: Why not have all the regulations the same then? Is that what you are saying?

Mr. Muffitt: That is what we are advocating. Make them all the same.

Mr. Dietsch: If all the regulations are the same for your particular industry, then your theory would be, if we follow it through one more step, that all those regulations should be the same, irrespective of what industry we are talking about.

Mr. Muffitt: I cannot speak for other industries.

Mr. Dietsch: But if it is fair for you, why is it not fair for others? I guess that is the question I want you to help me with.

Mr. Muffitt: In the appliance industry, it makes sense. I do not have any expertise in other industries. I cannot speak for petroleum or transportation or other industries. I do not know that. There has been a lot of work done with energy efficiency on home appliances. That is an industry I have been involved in for some time and that I know. I do not know what the effect would be in the lumber industry. I do not know whether it is good for them. I know it would be good for the appliance industry.

Mr. Dietsch: Either I am not quite understanding you or you are not quite understanding me. I am not sure which it is, so we will throw that one away.

In terms of the regulations, as I understand your philosophy, you feel that the regulations should be the same in Canada as they are in the United States and that will assist you in having a level playing field.

Mr. Muffitt: Right.

Mr. Dietsch: What I have trouble understanding in my mind is, if that is the scenario, then why would not regulations that affect other industries just be the same? Who would set up the regulations? Are ours better or are the American regulations better?

Mr. Muffitt: I cannot answer your question for other industries. I do not know other industries.

Mr. Dietsch: Let me rephrase it then. Did I understand you correctly in saying you felt that their regulations were better than ours?

Mr. Muffitt: Their regulations work and will achieve the desired purpose. If we could improve it by 10 per cent, I am not sure we would benefit by it. If it is good enough, it is good enough; it does not have to be better. I am not sure there is that much to be gained by the last 10 per cent. If you are going to improve energy efficiency by a 30 per cent margin, adding another three per cent or an additional 10 per cent to it, at the cost of having special tooling or special methods, may not result in an overall benefit.

Mr. Runciman: It gives us a distinct identity.

Mr. Chairman: Mr. McGuigan, have you finished your line of questioning?

Mr. McGuigan: I have not had any sort of answer that makes sense to me. First of all, I certainly agree with you that if we have one standard, that makes it a lot easier for everybody.

Mr. Muffitt: Yes, easier and cheaper.

Mr. McGuigan: No one could argue with that. If in our wisdom, or lack of wisdom, here in Ontario we did say: "We want a standard that is 10 per cent higher; therefore, if you are going to sell that product in Ontario"—I do not care where it is manufactured, whether it is in the United States or here—"it has to be 10 per cent higher," I can see where you might get mad and say: "Hell, we're going to leave. Forget all about the Canadian market. We won't produce in the Canadian market any more. We'll just produce for the United States market and we'll go to the United States." I can see a person doing that. But you are a businessman and you are not going to leave behind all the goodwill you have here among your customers.

Anyway, you move to the United States and you have to put out two different products, one to sell in the United States and one to sell in Canada, and so does your competitor, the US-based company. They have to put out one for Canada and one for the United States, provided that they sell in both markets. In that scenario, I cannot see any disadvantage to you to force you to move to the US.

Mr. Muffitt: You do not think there is any disadvantage to having to comply with such things as the language provisions in Quebec? That is a special case; that is more costly.

Mr. McGuigan: You are avoiding my question, though. Nothing that we are going to do here is going to change that language.

Mr. Muffitt: No, but it is just another one of the cases. We have a little special case for one place; another little special case for another little place. Pretty soon you have Alberta ending up with its standards; Ontario ending up with its standards.

What is wrong with the US standard? It has been derived by people, through a consultative process, who are just as bright and well intentioned as our people, with a lot more polarization and give and take because of the way the system operates. Why do we want to be different to get an extra few percentage points and impose that burden? Why bother? Just save the money and increase the rates. It is going to

cost the consumers of Ontario the same amount of money. Excuse me, but it is easy to spend somebody else's money.

Mr. McGuigan: Every time I try to pin you down, you change the argument. I do not say that to be nasty about it.

Mr. Muffitt: I think the argument basically is that as long as it is the same for everybody, it is fair for everybody. What I am saying is that fair for everybody is higher cost for the people of Ontario and higher cost for the manufacturers of Ontario. That is the point I am making: If you make a special case, it costs more.

Mr. McGuigan: The conclusion you are leaving with me by not answering my question is that there really is not much that would drive you out of Ontario by having two different standards.

Mr. Muffitt: You mean in the field of energy, this particular issue. I am not a shareholder of the company. I am not an owner of the company. I am a senior manager of the company. I am going to tell you, it is a tough business to be in today. If you look at that particular industry and look at the multinational companies that are operating in the appliance industry and do a determination of where they are making their capital investments—

Mr. McGuigan: You do not have to convince me on the merits of a single standard. I am convinced on that. I prefaced my question by saying that in our wisdom, or lack of wisdom, we happened to come up with two different standards. I cannot see in my mind whether it matters very much to the company which side of the border we produce it on as long as the conditions on both sides of the border are the same.

Mr. Muffitt: As long as the conditions on both sides of the border are the same? Yes, that is true, conditions on both sides of the border being the same.

Mr. McGuigan: Thank you very much.

Mr. Chairman: Mrs. Sullivan, do you have a supplementary?

Mrs. Sullivan: Yes, it is a supplementary to part of that question. It relates to your discussion of the cost-effectiveness of increasing standards. I assume that your company belongs to the electrical equipment manufacturers' association or one of those umbrella organizations.

Mr. Muffitt: No, we do not. We belong to the Canadian Manufacturers' Association. We do not belong to the Electrical and Electronic Manufacturers Association of Canada.

Mrs. Sullivan: Is that because it is in a different area of electronic equipment manufacturing?

Mr. Muffitt: No, it is because its dues structure penalizes us. I do not want to expand on that. It is not an equitable dues structure. That is the only reason we do not belong. But we do belong to the Canadian Manufacturers' Association.

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Mrs. Sullivan: Okay. I was going to ask you about industry work, for example with Hydro, in determining the cost-effectiveness of increments in appliance efficiencies. I probably wanted more of a general view than your own corporate view. I think that might be interesting for this committee to pursue: where in fact in the production of appliances or electrical equipment it has become uneconomic to make additional demands or to put—

Mr. Muffitt: That is a good question. I do not know how to answer it. I do not know where it becomes uneconomical. I do not know where it cuts over.

There is a substantial amount to be saved in household consumption of electricity by improvement in appliance energy consumption, based on the numbers that I have seen. And I think there is some to be saved through energy conservation. But I do not see the Ontario market as separate from the North American market. That is the problem. I do not see it as a special market.

If you are going to win the war on energy conservation you need some allies. In the business that we are in, I do not see it being effective to win the war all by yourself in the province of Ontario. I do not see that happening, because it does not make sense for us to produce special products for the province of Ontario. Somebody will, but the consumer is going to pay for it.

Mrs. Sullivan: Although as a market segment, it is not an insignificant market segment.

Mr. Muffitt: In the total American market scheme of things, it is not horribly big. The total Canadian market for freezers is 230,000 to 240,000. The US market is 1.2 million; it is six times as big. The penetration of the marketplace in Canada is higher than it is in the United States; so the situation is even worse in other products.

We are pretty small stuff. We are small producers. The biggest world showplace of home appliances is a show called Domotechnica, held in Cologne each year in February. If this room represented the size of the presentations of the world marketplace in that thing, the Canadian

participation would be smaller than that coffee mug.

Mrs. Sullivan: Yes, I understand that.

Mr. Muffitt: In the total scheme of things, we are pretty small. But that is where we compete. To impose a penalty or not to seek to work with the rest of the room but just to work with the coffee pot is a bit of a problem in my mind. I am sorry for getting on my soapbox, but it is a burden that the manufacturers in the country are ill equipped to afford, because we have to compete in a world market. We have to grow, because every year it costs us more and more for employees, it costs more and more for the space and the things we provide to the economy and we can only finance that through growth.

Mrs. Sullivan: I would have been interested in any response that you have or that your company might latterly provide on the cost-effectiveness of increasing efficiency, given that this is one of the ways that ultimately will be considered in terms of replacing the supply. One of the criteria for making choices is cost-effectiveness.

Mr. Muffitt: We would be pleased to work with whatever organization came forward to head up and format some sort of a study that we could contribute information to in a format that they thought was appropriate. I guess what we are not able to do is to generate that kind of information on a goodwill basis, nor do we want to be paid for it; that is not our business. But we would gladly contribute information to anybody who came forward to conduct that kind of study.

Mr. Chairman: Mr. Muffitt, I want to thank you for coming before us. In our deliberations we often speak in the aggregate and in the abstract perhaps. It is very helpful to get the perspective of someone who is actually out producing the products and trying to sell them. We thank you for coming in and speaking with us. I think you can see by the discussion you caught our attention as well.

Mr. Dietsch: I would like to make a closing point as well. I think in Mr. Muffitt's very appropriate way he has flagged an area of great concern to many of us in terms of if the free trade deal does go through and the Canadian people decide that is what they would like to have. It flags a number of areas such as the regulations, which you point out, and the point I was trying to make of how that spins off to many more industries. I found it very provocative and very interesting.

Mr. Chairman: Thank you, Mr. Dietsch. Perhaps you can take that debate to the finance and economic affairs standing committee.

Mr. Dietsch: Absolutely.

Interjection.

Mr. Dietsch: That is his problem. That is why they do not sell enough of them, because they last too damned long.

Mr. Chairman: Thank you again, Mr. Muffitt. I will adjourn the committee until 10 o'clock tomorrow morning and ask the subcommittee to stay behind for a brief meeting.

The committee adjourned at 4:36 p.m.

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